

FUNCTIONAL SYSTEMS ANALYSES/
REGIONAL ISSUES REPORT

**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**



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Western Division - Naval Facilities Engineering Command

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Functional Systems Analyses/Regional Issues and Options Report

**REGIONAL PLAN FOR SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

Prepared for

Western Division - Naval Facilities Engineering Command

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I. INTRODUCTION

PURPOSE

This report presents analyses of 13 functional systems, which collectively define the Naval Shore Establishment of the San Francisco Bay Region, and the regional issues which have been identified as the result of these analyses. An earlier report, SHORE ESTABLISHMENT OVERVIEW/ACTIVITY PROFILES, geographically analyzed the Shore Establishment by examining Naval activities. This report analyzes this establishment by breaking it down into **functional systems**, each of which defines an identifiable set of personnel and/or facilities that perform a common task, usually cutting across the boundaries of individual Naval activities.

To assist in the examination of functional systems, and in the identification and prioritization of regional issues, they have been divided into three categories as follows:

- Operational Support Functions;
- Shore Establishment Support Functions; and
- Personnel Support Functions.

The operational support category includes those functions which have an operational mission or directly support operational missions. As its title suggests, the shore establishment support category includes those functions which provide for the maintenance and operation of the physical plant and organizational framework used by the operational and personnel support functions. Personnel support functions are those which directly provide for the needs of Naval personnel in the areas of health care, housing, and personnel services. Table I-1 shows the functional systems included within each of these three categories and the scope of each functional analysis.

One of the major purposes of the Functional Systems Analyses is to identify **regional issues** to be examined in the REGIONAL PLAN. A regional issue exists when current or projected conditions in the Bay Region are or will be at variance from what is considered desirable for all or a major part of the Bay Area Shore Establishment and when concerted action by the Shore Establishment is required to bring about a change in conditions.

Closely linked to the purpose of identification of regional issues is the identification of options for resolving them. An **option** is defined as one of several alternative ways of employing the Shore Establishment's financial, personnel, physical plant, and other resources to change conditions which now or will be at variance with what is considered desirable. Another major purpose of this report is the **preliminary** identification of options for the resolution of the regional issues it identifies.

Table I-1: Categorization of Functional Systems

<u>Category</u>	<u>Functional System</u>
Operational Support	Fleet Berthing includes Maintenance Aviation includes Maintenance Communications Ordnance Supply POL Training
Shore Establishment Support	Regional Command Relationships Facilities Maintenance Ground Access Highways and Transit Land Use Compatibility
Personnel Support	Health Care Housing Personnel Services

ORGANIZATION

This report contains 14 functional system analyses. Since each functional system differs from the others, these analyses do not follow a precisely uniform format. Each analysis does contain certain common elements:

- Functional overview, including general characteristics and objectives;
- Regional relationships, including relationships with other functional systems and the civilian community;
- Operational elements;
- Analysis of operational elements; and
- Regional issues and options.

The individual functional system analyses are preceeded by a description of the overall functional pattern of the region. These analyses are followed by a summary of the regional issues and options they raise.

II. MAJOR FINDINGS AND REGIONAL ISSUES/OPTIONS SUMMARY AND RECOMMENDATIONS

MAJOR FINDINGS

Finding One. The San Francisco Bay Region contains several existing and potential capabilities which make it uniquely valuable to the nation's defense. They are:

- Berthing facilities for nuclear powered attack aircraft carriers directly accessible to an airfield, a depot level aircraft maintenance facility and potentially a dry dock;
- Shipyard facilities for the repair and overhaul of nuclear powered attack submarines;
- Airfield and maintenance facilities for land-based anti-submarine aircraft;
- Communications facilities for fleet broadcasts and tactical communications characterized by relatively high degrees of flexibility and survivability;
- Logistics facilities capable of rapid expansion to support operations in remote overseas areas;
- Ordnance storage, issuance and transshipment facilities to support Navy and Army operations; and
- A highly developed and sophisticated Naval infrastructure for the support of both shore establishment physical facilities and personnel.

Finding Two. Given adequate resources, the San Francisco Bay Region could significantly expand its Fleet support capacity without the need to acquire major additional real estate; however, land use capability with respect to the Navy's existing real estate assets is the single most important limiting factor, followed by housing and ground access, facing the Navy Shore Establishment in the Region.

Finding Three. The San Francisco Bay Region is not merely a Region by accident of geography; its Naval activities are highly interdependent. Yet there is very little coordination within the Region and no consistent set of data or assumptions at the Regional level to facilitate individual activity master planning.

Finding Four. Planning for the San Francisco Bay Region, as well as all other Pacific Coast Naval Regions, should not be done in isolation, but should be done on an integrated, coastal basis in order to bring the broadest possible perspective to planning efforts and to reduce inter-Regional competition.

REGIONAL ISSUES/OPTIONS SUMMARY AND RECOMMENDATIONS

Each of the functional systems analyzed in this report contains a listing of the Regionally significant issues raised by the function and potential options for resolving them. These lists of issues and options are extracted from the functional analyses and repeated in this section in order to provide a summary of the issues identified to date which will be addressed in the Regional Plan for Bay Area Naval Shore Activities. Options preliminarily recommended for further study and potential development into policies contained in the PLAN are shown in bold type.

Fleet Berthing

Issue 1: Not all homeporting activities have sufficient berthing and/or community support facilities to accommodate the ships currently assigned to them. This problem is most pronounced at NSC Oakland and WPNSTA Concord.

Options:

- (a) Maintain the status quo.
- (b) Upgrade support facilities at NSC Oakland.
- (c) Build new pier at WPNSTA Concord to accommodate all ships homeported there.
- (d) Reassign ships homeported at WPNSTA Concord to NAVSHIPYD Mare Island.

Issue 2: Some piers lack sufficient utilities to provide adequate cold iron capabilities, thus limiting the Regional flexibility for moving ships among berths.

Options:

- (a) Maintain the status quo.
- (b) Upgrade pier utilities as quickly as possible (this is already underway).
- (c) Change policy to require complete cold iron capability at homeport piers and require ships in port to operate their plants.

Issue 3: NAVSTA Treasure Island has several limitations as an appropriate site for the additional fleet berthing facilities required to accommodate the proposed strategic Homeporting Plan.

Options:

- (a) Maintain the status quo.
- (b) Develop mitigation measures to offset the problems with transportation access to the Island, seismic conditions, and tsunami hazards.
- (c) Reactivate Hunters Point to provide the needed berthing capacity for the new ships.

- (d) Negotiate with the Army and the Port of Oakland to gain access to the Oakland Army Base wharfs as additional berthing space for homeporting some of the new ships.

Aviation

Issue 1: Regional command relationships within the aviation function are fragmented, frustrating efforts toward coordinated planning and the most efficient use of the function's resources.

Options:

- (a) Maintain status quo.
- (b) Obtain upper echelon concurrence to develop formal, Regional channels for coordination, including authority to compel resolution of issues at the local level.
- (c) Locally develop and institutionalize procedures for enhanced, informal Regional coordination.**

Issue 2: The abilities of NAS Alameda and Moffett Field to conduct air operations will be increasingly threatened by off-station development within the noise and safety protection zones of their runways.

Options:

- (a) Maintain status quo.
- (b) Update AICUZ studies for both stations.
- (c) Option (b) plus develop comprehensive program, under Western Division leadership, to coordinate AICUZ studies with appropriate Airport Land Use Commissions with the ultimate objective of obtaining recognition of Navy AICUZ concerns in local Airport Land Use Plans.**

Issue 3: Although the issue of joint use at NAS Moffett Field has been resolved for the present time, pressures for joint use will continue and are likely to increase with the increase of general aviation activity in the Region.

Options:

- (a) Maintain status quo.
- (b) Develop a strong, clearly defined Regional policy on joint use and include it in the Regional Plan.**

Issue 4: Regional airspace is projected to reach IFR capacity during the peak period sometime before 1997, and the Regional Airport Plan does not provide priority of access based on the national defense.

Options:

- (a) Maintain status quo.

- (b) Participate in Regional airspace planning process.
- (c) Option (1) plus public education program as to the importance the Navy's aviation mission in the Region.

Issue 5: Naval Air Rework Facility (NARF), one of two depot level aviation maintenance activities on the Pacific Coast, requires additional space within the air station to both expand its operations and consolidate its dispersed activities.

Options:

- (a) Maintain status quo.
- (b) Explore with BCDC potential for filling in seaplane lagoon in exchange for mitigations elsewhere in the Region.
- (c) Continue investigation of relocation of Fleet Hospital Support Office from NSC Alameda Annex to NCS Stockton.
- (d) Options (b) and (c).

Communications

Issue 1: Communications facilities at NCS Stockton and NAVSECGRUACT Skaggs Island are threatened by encroachment in the form of EMI, physical obstruction of line-of-sight communications, and additionally in the case of Stockton, physical displacement; yet the strategies for dealing with these threats are largely reactive.

Option:

- (a) Maintain status quo.
- (b) Develop strategies designed to achieve community recognition of the importance of these communications facilities to national defense and the need to reflect sensitivity zones in local general plans and land use regulations.
- (c) Option (b) plus aggressively work for actual inclusion of communications encroachment concerns in local land use regulations.

Issue 2: Due to the divestiture of AT&T, the Navy's "telephone bill" is expected to sharply increase in the near term future due to a 200 to 300 percent increase in charges for local calls, the imposition of pre-paid, up-front charges for installing new cable, and the potential shift in cable maintenance costs from PAC-BELL to the Navy.

Options:

- (a) Maintain status quo.
- (b) Support installation of a Consolidated Area Telephone System within the Bay Region.

- (c) Investigate other alternatives for achieving telephone communications cost reductions which address short term needs for telephone system maintenance, repair, and renewal.

Issue 3: To maintain its efficiency and keep pace with technological change, the Naval administrative telephone system within the Region must make the transition from a primary voice, analog-based system to a fully integrated, digital-based system. Yet, there exist substantial barriers to this transition, including cost, lack of personnel expertise, and inadequate planning.

Options:

- (a) Maintain status quo.
- (b) Develop policies and programs at both the Regional and activity level for funding, training, and planning in support of the transition to a fully integrated digital-based administrative telephone system.

Ordnance

Issue 1: Ordnance operations in the Bay Region are restricted by the long route ordnance barges must travel from Naval Weapons Station Concord to NAS Alameda and Explosive Anchorages 12 and 14 and by the inability of certain ships to use the Weapons Station.

Options:

- (a) Maintain status quo.
- (b) Reactivate Pier 35 at Mare Island Naval Shipyard.

Issue 2: The proposed construction of a BART park and ride lot at the Weapons Station, and the possible construction of a North Concord BART station on this site and extension of BART along State Route 4, may raise land use compatibility issues which could potentially impact Weapons Station operations.

Options:

- (a) Maintain status quo.
- (b) Initiate Land Use Compatibility Study of this issue.

Supply

Issue 1: The centralization of the supply function within the Region has resulted in a high degree of dependency on its communications and delivery functional subsystems, thus increasing its vulnerability to breakdown when these subsystems malfunction.

Options:

- (a) Maintain status quo.
- (b) Decentralize Supply Functional System.
- (c) Upgrade communications and delivery subsystems.**
- (d) Partially decentralize supply system and concurrently upgrade communications and delivery subsystems.

Issue 2: Intra-Regional communications within the Supply Functional System is constrained by its currently technologically unsophisticated telecommunications system.

Options:

- (a) Maintain status quo, i.e., rely on the present best efforts of NSC Oakland to upgrade the Regional Supply Telecommunications System.
- (b) Support the efforts of NSC Oakland by developing a Regional Telecommunications Policy, which would address supply as well as other communications needs, and propose a strategy for implementing this policy.**

Issue 3: A major supply functional system asset with potential for regional significance, i.e., 5.5 million square feet of warehouse space located at NCS Stockton, is now largely under non-Navy control and would be unavailable to meet Navy generated needs associated with the Navy Expansion Program (NEP) and other actors in the short- and mid-range future.

Options:

- (a) Maintain status quo.
- (b) Develop a regional policy and implementation strategy for the return to Navy control of NCS Stockton warehouse space.**

Issue 4: The BALD system is potentially overextended and would be impacted by future increases in traffic congestion or destruction to bridge and tunnel lines within the regional transportation network.

Options:

- (a) Maintain status quo.
- (b) Develop a regional policy and implementation strategy to enable Public Works Center to devote more resources to the BALD system.
- (c) Develop a regional contingency plan for the BALD system addressing alternative routes/means of delivery in the event of specific failures in the regional transportation network.
- (d) Pursue both (b) and (c).**

Issue 5: The break-bulk cargo capability of the NSC Oakland waterfront is vulnerable to transfer from Navy control due to its apparent underutilization.

Options:

- (a) Maintain status quo.
- (b) Thoroughly document the importance of this capability in the Regional Plan, as well as the activity master plan.**

Petroleum, Oil and Lubricants Operations

Issue 1: The Point Molate Fuel Pier cannot accommodate Fast Combat Support Ships (AOE's).

Options:

- (a) Maintain status quo.
- (b) Enlarge pier, dredge pier vicinity and approach channel to project depth of 45 feet to accommodate AOE's.
- (c) Option (b) plus extend pier 350 feet to edge of natural channel (see Issue 2, Option (b)).**
- (d) Construct pipeline connecting NAS Alameda with SPPL commercial pipeline and construct additional storage facilities at NAS to be able to fuel ships with both DFM and JP-5 at pierside via local distribution lines. (See Issue 3, Option (f)).

Issue 2: The orientation and location of Point Molate Fuel Pier require that it be dredged on an annual basis to maintain the 35 feet project depth.

Option:

- (a) Maintain status quo.
- (b) Extend the pier 350 feet to the edge of the natural channel.**

Issue 3: The number and capacities of fuel barges is inadequate to meet the major demands occasioned by the fueling of one or more large supply ships.

Options:

- (a) Maintain status quo.
- (b) Increase size of Navy barge fleet.**
- (c) Contract for additional civilian barge services.**
- (d) Adopt policy requiring fueling at the Point Molate Fuel Pier with only limited exceptions related to size of ship and operational factors.

- (e) Construct pipeline connecting NSC Oakland with Southern Pacific commercial pipeline and additional storage facilities at NSC to be able to fuel ships at pierside via local distribution lines.
- (f) Construct pipeline connecting NAS Alameda with SPPL commercial pipeline and construct additional storage facilities at NAS to be able to fuel ships with both DFM and JP-5 at pierside via local distribution lines.

Issue 4: Barge deliveries to NAS Moffett Field present difficult scheduling problems, are subject to disruption by the weather, and require the periodic costs of maintenance dredging of Guadalupe Slough.

Options:

- (a) Maintain status quo.
- (b) Conduct detailed cost analysis comparing barge and pipeline alternatives, including all monetary and nonmonetary costs over the lifetime of the pipeline alternatives, and construct pipeline if found to be superior.

Training

Issue 1: Technical training facilities in the Bay Area may not be able to accommodate the increased training requirements of additional ships to be homeported in the Bay Area.

Options:

- (a) Maintain the status quo.
- (b) Send overflow students to schools outside of the region.
- (c) Give local students priority for enrollment in local classes.
- (d) Continue expanding training facilities and lobby Congress for additional manpower allocation for increasing school staffs.

Issue 2: There are insufficient small arms target ranges for proficiency training in the Region.

Options:

- (a) Maintain status quo.
- (b) Build another range.
- (c) Investigate interservice use of training facilities in the Bay Area.
- (d) Joint Naval-civilian police department use of small arms ranges should be studied as an alternative to construction of more Navy small arms facilities.

Regional Command Relationships

Issue 1: Effective, integrated, and coordinated relationships among the components of the Bay Area Shore Establishment do not currently exist within the spirit of OPNAVINST 5400.24C.

Options:

- (a) Maintain status quo.
- (b) Centralize the local coordination function by designating COMNAVBASE San Francisco Representative as the sole local coordinator or as subregional coordinator for the Region.
- (c) Maintain the four existing local coordinators, but establish COMNAVBASE San Francisco as an independent command physically located within the Region.**

Issue 2: The effectiveness of the Bay Area Naval Shore Establishment in representing itself to the civilian community is hampered because COMNAVBASE San Francisco is physically located in San Diego.

Options:

- (a) Maintain status quo.
- (b) Establish COMNAVBASE San Francisco as an independent command physically located in the Bay Area and under the command of an active duty Flag Officer.**

Issue 3: Mobilization preparedness planning for COMNAVBASE San Francisco is impaired by this command's current perception as a "phantom command" without resources to adequately carry out its preparedness planning responsibilities.

Option:

- (a) Maintain status quo.
- (b) Revise the pertinent CINCPACFLT instruction to clearly specify the mobilization responsibilities of COMNAVBASE San Francisco and allocate adequate reserve officer resources for preparedness planning.

Facilities Maintenance

Issue 1: Is it more efficient to continue centralizing the facilities maintenance function or would decentralization be more efficient?

Options:

- (a) Maintain the status quo.
- (b) Retain the Public Works Center but conduct studies to determine additional level of resources required for it to perform more effectively according to customer expectations.**

- (c) Study the possibility of re-establishing public works departments.
- (d) Decrease the number of activities served by PWC to only those in the East Bay (NSC Oakland, NAS Alameda, NAVHOSP Oakland).

Issue 2: The trend towards increased use of civilian contractors to perform maintenance functions is diminishing the Navy's self-sufficiency while it is creating major cost savings.

Options:

- (a) Maintain the status quo.
- (b) Continue with CA studies and contracting with civilians putting financial savings as a priority over self sufficiency.
- (c) Find other ways to cut costs while retaining a fully trained public works staff at each activity.

Ground Access

Issue 1: Because the Naval Shore Establishment is both interdependent and widely dispersed throughout the Region, its ability to function is directly related to the operational efficiency of the Regional group access network. This network is currently operating at or in excess of capacity in many of the links heavily used by the Navy and this condition will be exacerbated to an unknown degree by the continued economic growth of the Region.

Option:

- (a) Maintain status quo.
- (b) Substantially increase the Navy's level of participation in the Regional transportation planning process conducted by the Metropolitan Transportation Commission. (See Issue 2, Option (c).)
- (c) Develop a low cost, annual survey technique for obtaining data on place of residence/place of work/mode of travel for Naval and civilian employees of the Naval Shore Establishment in order to document Regional commute patterns and related factors for use in Navy Regional transportation planning as well as in decisions regarding the future location of Navy Regional serving facilities such as housing, health care, commissaries, and exchanges.
- (d) Options (b) and (c).

Issue 2: The Navy Shore Establishment is not well-served by Regional public transit.

Options:

- (a) Maintain status quo.
- (b) Initiate coordination with Regional transit operators to improve transit accessibility for Naval personnel, especially the transit-dependent.

(c) Substantially increase the Navy's level of participation in Regional transit transportation planning process. (See Issue 1, Option (b).)

(d) Options (b) and (c).

Issue 3: The Regional transportation network is tied together by many bridges and tunnels whose destruction or temporary disruption would severely impact all elements of the Region, including the Naval Shore Establishment.

Options:

(a) Maintain status quo.

(b) Assess impacts of bridge and tunnel destruction and disruption on individual Naval activities as part of the activity master planning process and develop contingency plans.

(c) Option (b) plus integrate individual contingency plans into a Regional ground access contingency plan.

Land Use Compatibility

Issue 1: Activity commanding officers are not adequately prepared and do not have adequate staff resources to play their demanding roles in land use compatibility matters.

Options:

(a) Maintain the status quo.

(b) Task Western Division Naval Facilities Engineering Command with developing a "short-course" (1 to 1 1/2 days) for newly arriving Bay Region activity commanding officers. This course should include current land use issues specific to their activities, briefings on local and regional land use agencies and personnel with whom they will deal, and background materials on regional land use issues.

(c) Expand the land use compatibility coverage in the orientation course prospective activity commanding officers receive prior to arriving in the Region to assume command.

(d) Establish dedicated land use compatibility billets at activities.

Issue 2: Activity master plans do not adequately address land use compatibility issues.

Options:

(a) Maintain the status quo.

(b) Make land use compatibility issues, including analysis of an activity's existing and potential exposure, formulation of policy, and development of an implementation program, an integral part of all activity master plans.

Issue 3: The role of Western Division Naval Facilities Engineering Command in land use compatability matters is not clearly defined, especially as it relates to Navy activities. Adequate staff resources are not assigned to this area, and Western Division does not play a high-level role in regional planning.

Options:

- (a) Maintain the status quo.
- (b) Clearly establish land use compatability roles of Western Division and Navy activities within the Region.
- (c) Assign additional staff to the International Affairs Unit, Western Division, and revise management policy to facilitate evening public meeting attendance by Western Division personnel.
- (d) Increase involvement of senior level Western Division staff in Regional planning programs, such as the Seaport Plan, the Regional Airport Plan, and the Regional Transportation Plan.

Issue 4: Under California law, cities, counties, and special purpose agencies are engaged in a sophisticated land use planning process which has extensive formal and informal opportunities for public participation, yet Navy activities participate in this process only to the extent of reacting to proposed land development projects.

Options:

- (a) Maintain the status quo.
- (b) Make the transition from reactive and proactive participation in the land development process to interactive participation.

Health Care

Issue 1: Regional consolidation has led to considerable improvements in the health care system but better system coordination is required between the branch clinics and the hospitals.

Options:

- (a) Maintain the status quo.
- (b) Make clinic coordination a Department at the Hospital to handle the branch clinics, the industrial clinics, and the preventive medicine departments.
- (c) Reorganize the branch clinics into a separate command that reports directly to the NAVMEDCOM NWREG rather than to the hospital.

Issue 2: The industrial clinics are underfunded.

Options:

- (a) Maintain the status quo.
- (b) Urge Congress to make occupational health and safety a high priority issue and appropriate additional funds for strengthening DOD's program.

Issue 3: The health care system lacks adequate data with which to plan for future manpower and facilities requirements.

Options:

- (a) Maintain the status quo.
- (b) Wait for BUMED to begin publishing planning data again.
- (c) Develop a regional entity responsible for maintaining accurate current and projected base loading information for activities in the Bay Area as well as continuing to use DEERS or other data to count retirees, retiree dependents, and other personnel eligible for Navy health care benefits.

Issue 4: Because of the Region's size and the poor public transit connections between most activities and the Hospital, it is sometimes difficult for personnel to get to the Hospital.

Options:

- (a) Maintain the status quo.
- (b) Develop an intra-Navy shuttle bus system for getting people back and forth to the hospital that operates more frequently than the current system of vans which are used to transport people.
- (c) Work with local transit districts to get other public transit service to the hospital.

Issue 5: Navy Ambulance drivers do not have enough experience handling all types of emergencies to maintain the necessary skills to handle all contingencies.

Options:

- (a) Maintain the status quo.
- (b) Contract with civilian companies for ambulance services at all activities.
- (c) Provide more extensive training for ambulance drivers with routine refresher courses.

Housing

Issue 1: The housing survey is an insufficient tool for measuring the Navy's housing need in the San Francisco Bay Area.

Options:

- (a) Maintain the status quo.
- (b) Amend the survey process to include information about housing requirements for all Navy personnel including those not eligible for Navy housing.
- (c) Find alternative data sources to provide more detailed information about living conditions for Navy personnel. The Navy already has several existing data bases which could provide relatively good information about where people live and how far they have to commute to work.
- (d) Do a special study of Navy housing conditions in the Bay Area to get accurate data concerning how many people are paying more than 115 percent of their housing entitlements for shelter, how many people live more than one hour from their duty station, and how many people are living in overcrowded or otherwise inappropriate housing.

Issue 2: The amount of housing that can be provided through MILCON and the new construction program is not enough to eliminate the housing deficit in the Central Bay housing complex.

Options:

- (a) Maintain the status quo.
- (b) Explore alternative ways for working with local non-profit housing developers to produce additional affordable housing units that can be dedicated for Navy use.
- (c) Educate local community leaders about the Navy's housing problems; enlist their help in lobbying Congress for additional MILCON appropriations to build housing in this area.
- (d) Move ahead quickly in determining an appropriate site for currently programmed new construction so that these units can be built as soon as possible.
- (e) Increase the housing entitlements so people can afford housing in this Region. This would prevent the Navy from having to build new housing.

Issue 3: Site selection criteria for new housing should include factors that consider regional planning issues related to other functional systems including ground access and personnel support.

Options:

- (a) Maintain the status quo.
- (b) Incorporate site selection criteria into the regional planning process.
- (c) Develop specific guidelines for all site selection studies conducted in this Region.

Personnel Services

Issue 1: The dispersal of Navy personnel living throughout the Region makes it difficult for commissaries and exchanges to efficiently serve their clientele.

Options:

- (a) Maintain the status quo.
- (b) Locate additional Navy housing in locations that are easily accessible to a Navy activity with a commissary and exchange.
- (c) Build a new commissary/exchange complex that would be oriented towards serving Navy personnel living in more remote residential areas of the region. This complex should be located in a place that is easily accessible by freeway as well as by public transit.

Issues 2: Some special services facilities are not adequate to serve the entire population they are supposed to serve.

Options:

- (a) Maintain the status quo.
- (b) Restrict the people eligible to use certain facilities to active duty personnel.
- (c) Suggest that NAVFACENGCOM reconsider its criteria to include the total number of people who will be using the facility beyond just active duty personnel.

Issue 3: Remote activities without a personnel support detachment are often subject to problems concerning pay and service records that take considerable effort to resolve at great cost in terms of time and efficiency.

Options:

- (a) Maintain the status quo.
- (b) Consider possibility of placing PSDs at all locations that are currently beyond a one-half hour one way trip from their PSD.

III. DEVELOPING SCENARIOS FOR ANALYZING FUNCTIONAL SYSTEM GROWTH

Purpose

The data collection and analysis task of the regional planning process represented by this report is only a first step towards developing a comprehensive plan for San Francisco Bay Area Naval Shore Activities. The next important step will be to create a picture of the future against which current conditions can be compared. The results of this comparison should indicate how the functional systems will be affected by changing fleet requirements and what steps may be required to ensure continued efficiency of Naval operations in this Region. This information will then form the basis of the Regional Plan.

A major constraint to this process is developing an accurate image of future conditions in the Region. The difficulty lies in the fact that the shore establishment must have knowledge of operational plans because the size and configuration of the Pacific Fleet drives the size and scope of shore establishment Fleet support operations. However, the ship operators are unable to communicate the intermediate and long-range plans to the shore establishment. In part this uncommunicativeness is due to national security requirements. But more importantly, the operators themselves are constrained in developing meaningful plans for the future because they must consider many imponderable factors, including the national defense budget, national foreign policy, and unforeseen changes in the international situation.

In light of these conditions, a reasonable way to consider the future could be to create a series of hypothetical scenarios that represent the best guess for future conditions given certain sets of circumstances. In this Region, for example, the proposed fleet expansion program will have different impacts on the shore establishment depending on how many ships are actually assigned to San Francisco Bay Area activities. This would require developing scenarios to accommodate low and high ends of the spectrum.

These scenarios would be clearly identified not as alternatives but as hypotheticals designed to test their implications, for the Bay Area as well as the Navy, of future increases in the Naval presence within the Region in response to assumed changes in operational requirements. Nor would these hypothetical scenarios be presented as prescribing the range of options from which the operator must select one. These scenarios would merely serve as a planning tool to test short and long-term implications in the expectation that when changes do occur in operational requirements, they will provide a method for amending the Regional Plan to reflect such changes.

Methodology

There are two ways to develop scenarios for future conditions in the Bay Area Naval shore activities. One is to generate a supply driven model based the shore establishment's capacity to expand. This would require assessing the establishment's current resources and calculating how much room there is for growth and what conditions would have to be satisfied for this growth to occur. But a supply driven model does not completely meet the requirements of the planning process because it is very difficult to assess the Region's potential capacity in a meaningful way. Another

problem is that identification of excess capacity through the planning process may induce pressures from federal, state, and local government on the Navy to divest itself of currently unused assets.

The preferred alternative for scenario development is a demand driven model showing what would be required of the shore establishment given the Fleet's requirements. This information would be relatively easy to ascertain since each increase in the number of ships homeported in the Region creates a discrete and measureable demand for services from each functional system included in the shore establishment. In most cases, this would require making specific assumptions about the relationship between the Fleet and the particular functions to establish an information baseline. Then the number and type of ships could be increased with each scenario, revealing the different impacts the scenarios would have on each functional system. Once the basic assumptions regarding relative relationships between the fleet and each functional system are established, this information can be programmed on a microcomputer. Then the impact of changing fleet size and composition can be easily measured. Utilizing a microcomputer for this purpose is both fast and cost-effective. Scenarios can be changed any number of times with the impacts being recalculated by the computer almost instantaneously.

To demonstrate how these scenarios could work, NAVCRAFT,¹ a preliminary computer model, has been developed. This model is designed to operate on the IBM PC, or compatible hardware, using Lotus 1-2-3 software. This equipment is currently in use by Western Division Naval Facilities Engineering Command, as well as many other Regional Naval activities. NAVCRAFT was applied to the housing functional system using three alternatives for fleet expansion. Before the model could be exercised, it was necessary to make assumptions about the officer and enlisted component for each ship, the marital factors for enlisted personnel and officers, and the eligibility factor indicating how many families would be eligible to live in Navy family housing. This information is included with each scenario. Table III-1 shows that if seven new ships of varying hull types are homeported in the Region, a total of 448 families would be eligible for family housing. In addition, there would be 730 unaccompanied personnel who will also be eligible for Navy accommodations. If the number of ships is increased to 14 then there will be 1,033 families eligible for family housing and 1,702 unaccompanied personnel, as shown on Table III-2. And, Table III-3 shows a maximum scenario of 15 ships with a demand for 2,010 units of family housing and 3,287 units of unaccompanied housing.

These numbers do not necessarily match other estimated demand increases for family housing related to the fleet expansion given elsewhere in this report (see Housing Functional System Analysis) because different assumptions were used to drive this model. A major part of developing these scenarios will be to arrive at accurate assumptions for each functional system in consultation with appropriate Navy personnel.

¹Naval Comprehensive Regional Analysis Forecasting Technique.

TABLE III-1: NAVCRAFT Housing Functional System Analysis: Scenario 1

Ship Class	Additional Number of Ships	Total Crew Strength		Total Families		Total Unaccompanied		Total Eligible Families	
		Officer	Enlisted	Officer	Enlisted	Officer	Enlisted	Officer	Enlisted
FFG	4	52	728	37	335	15	393	37	210
CGN	1	36	445	25	205	11	240	25	128
MCN	2	18	120	13	55	5	65	13	35
TOTAL	7	106	1,293	75	594	31	699	75	373

Scenario Assumptions

Marital Factor		Family Housing Eligibility Factor		Dependent Factor	
Officer	Enlisted	Officer	Enlisted	Officer	Enlisted
0.71	0.46	1	0.63	2.50	2.30

Source: SCA

TABLE III-2: NAVCRAFT Housing Functional System Analysis: Scenario 2

Ship Class	Additional Number of Ships	Total Crew Strength		Total Families		Total Unaccompanied		Total Eligible Families	
		Officer	Enlisted	Officer	Enlisted	Officer	Enlisted	Officer	Enlisted
FFG	4	52	728	37	335	15	393	37	210
CGW	1	36	445	25	205	11	240	25	128
MCN	2	18	120	13	55	5	65	13	35
CG	2	46	638	32	293	14	345	32	184
DD	2	36	548	25	252	11	296	25	158
FFG	3	39	546	28	251	11	295	28	158
TOTAL	14	227	3,025	160	1,390	67	1,635	160	873

Scenario Assumptions

Marital Factor		Family Housing Eligibility Factor		Dependent Factor	
Officer	Enlisted	Officer	Enlisted	Officer	Enlisted
0.71	0.46	1	0.63	2.50	2.30

Source: SCA

TABLE III-3: NAVCRAFT Housing Functional System Analysis: Scenario 3

Ship Class	Additional Number of Ships	Total Crew Strength		Total Families		Total Unaccompanied		Total Eligible Families	
		Officer	Enlisted	Officer	Enlisted	Officer	Enlisted	Officer	Enlisted
FFG	4	52	728	37	335	15	393	37	210
CGN	1	36	445	25	205	11	240	25	128
MCN	2	18	120	13	55	5	65	13	35
CG	2	46	638	32	293	14	345	32	184
DD	2	36	548	25	252	11	296	25	158
FFG	3	39	546	28	251	11	295	28	158
CVN	1	135	3,057	95	1,405	40	1,652	95	882
TOTAL	15	362	6,082	255	2,795	107	3,287	255	1,755

Scenario Assumptions

Marital Factor		Family Housing Eligibility Factor		Dependent Factor	
Officer	Enlisted	Officer	Enlisted	Officer	Enlisted
0.71	0.46	1	0.63	2.50	2.30

Source: SCA

Conclusions

The method described here for developing demand driven scenarios as a way to measure future requirements for the San Francisco Bay Area Naval Shore Activities offers an exciting opportunity to do Regional planning in cohesive and comprehensive fashion. The scenarios will not necessarily be a 100 percent accurate reflection of future conditions but will define a range in which most changes will fall. In addition, these scenarios offer considerable flexibility in the planning process because if at some future time conditions vary significantly from the existing sceanrios, new scenarios can be easily developed to take their place and readily measure the impacts of these changes on the Region's Shore Establishment.

IV. FLEET BERTHING

OVERVIEW

The Fleet Berthing Functional System includes the piers, wharfs, and moorings for Navy ships coming to the San Francisco Bay Area either on a permanent or transient basis. It also covers the services which ships in port require, including utilities, equipment for maintenance and repairs, and access to yard craft, tug boats, fuel barges, etc. Finally, it includes ship maintenance and repair operations.

Objectives

The primary objective of this functional system is to provide support to ships homeported in the San Francisco Bay Area. These ships are assigned to specific activities but not to berths. An increasing trend is to provide greater flexibility in berthing opportunities by upgrading cold iron utilities and dredging deeper channels wherever possible. This would allow for greater variation in berthing throughout the Bay Region.

Fleet berthing facilities cannot be considered in the abstract, but only relative to the ships they must accommodate. There are five administrative categories of ships that must be provided with berthing facilities in the Bay Area. These include: (1) aircraft carriers and combatants, (2) service force ships, (3) Navy Reserve Program ships, (4) Military Sealift Command Pacific Ships, and (5) Coast Guard cutters. Other than the facility itself the major physical constraints that limit which type of ship can use different piers are water depth and bridge heights.

REGIONAL CONTEXT

Relationship to Other Functions

As Table FB-I shows, fleet berthing is a functional area that receives support from rather than providing support to other functional systems. Fleet berthing is a key function around which other shore establishment functions are focused.

Relationship to Civilian Community

Land Use Conflicts. Two activities which provide over half of the Navy's homeport berths in this Region are located in, or adjacent to, the Port of Oakland. These activities, NSC Oakland and NAS Alameda, are under constant pressure from the Port to lease land to civilians or make other concessions, including limiting aircraft approaches into NAS Alameda, to accommodate civilian economic objectives. This pressure has not yet directly impacted fleet berthing. However, on a long range basis local public agencies are not necessarily sympathetic to the Navy's needs and may not help protect its land through regulatory controls. The best example of this situation is the San Francisco Bay Conservation and Development Commission's Seaport Plan (written in conjunction with the Metropolitan Transportation Commission). All Navy land is designated as a military use in the Seaport Plan, but

Table FB-I: Relationship of Fleet Berthing to Other Functional Systems

<u>Functional Systems</u>	<u>Affected Activities</u>	<u>Type of Support Provided (P) or Received (R)</u>
Aviation	NAS Alameda	R - Airplanes loaded onto aircraft carriers
Communications	NAVCOMMSTA Stockton	R - Ship to shore communication links
Ordnance	WPNSTA Concord	R - Ammunition and other weapons required by ships during deployment
Supply	NSC Oakland	R - Supplies for ships
		R - Main site and Alameda facility homeport ships including Coast Guard cutters
POL	NSC Oakland (Point Molate Fuel Depot)	R - Fuel and lubricants
Training	NAVSHIPYD Mare Island NAVSTA Treasure Island	R - Crew training during in port periods
Facilities Maintenance	PWC SFRAN BAY Oakland	R - Maintenance of shoreside support facilities, including cold iron utilities
Ground Access	--	R - Supplies for ships come to piers by truck Regional transportation system allows crews to get from duty station to residences
Health Care	NAVHOSP Oakland	R - Medical care for dependents of ship crews
Housing	PWC SFRAN BAY Oakland	R - Housing for dependents of ship crews
Personnel Services	NAS Alameda	R - Naval exchange and commissary services

there is a qualifier to this designation saying that if the land is excessed, it should be developed for other maritime related uses. If the Navy were forced to give up its assets in the Oakland Harbor area, it would be losing some of its most important berthing resources.

Civilian Ship Building and Repair Industry. A very important civilian industry related to fleet berthing is shipbuilding and repair. San Francisco has historically had a very strong ship repair industry. However, due to changes in civilian shipping lines' practices, local ship repair contractors have had trouble surviving in recent years. The active ship repair labor force was at about 10,000-12,000 people in the early 1970's, but this number has dropped to about 2,500 today.¹ In an effort to rebuild the industry, the Bay Area Ship Repair Association was formed in 1980 by local business people to lobby for increased homeporting of Navy ships in the San Francisco Area. These ships would bring increased contracts for the local shipyards since Navy policy states that 30 percent of the Navy work that is put out to civilian contractors for bids must be completed in the homeport. While this group has had some success with regard to Regional homeporting, it has been primarily instrumental in creating better civilian attitude towards the Navy.

From the Navy's perspective, the civilian shipyards are an asset of this Region. Both the Supervisor of Shipbuilding Maintenance and Repair and the Commander Service Group One think that the work force in this area has the capacity to complete additional Navy work. Concerns are that work tends to be more expensive here than other places on the West Coast. Also, if the work force drops below a critical level of about 2,000 people, there will not be the large trained reserve labor pool to do the occasional big job.

OPERATIONAL ELEMENTS

Administration

Command Afloat. All Navy combatant ships homeported in the San Francisco Bay Area or other ports on the West Coast report to one of three type commanders: Commander Naval Air Forces U.S. Pacific Fleet (COMNAVAIRPAC), Commander Naval Surface Forces U.S. Pacific Fleet (COMNAVSURFPAC), and the Commander Naval Submarine Forces U.S. Pacific Fleet (COMNAVSUBPAC). All three type commanders report to the Commander in Chief U.S. Pacific Fleet (CINPACFLT). COMNAVAIRPAC and COMNAVSURFPAC are based in San Diego, while COMNAV-SUBPAC and CINPACFLT are located in Pearl Harbor, Hawaii. Each of the type commands is responsible for conducting its own operational and planning activities. All coordination and integration between the three is done at the CINCPACFLT level.

Command Ashore. Shore establishment activities controlling the Region's fleet berthing assets are often in different chains of command than the ships they support. This situation is the most pronounced in the case of surface ships. All surface ships homeported in the Bay Area, excluding aircraft carriers, are in the

¹Port of San Francisco, "Wharfside," March, 1984.

COMNAVSURFPAC chain of command. However, COMNAVSURFPAC has no shore facilities in this region.

Conditions become even more complicated because the activities with berthing facilities are not under the same command. For example, NAVSTA Treasure Island is in the COMNAVLOGPAC command; NAVSHIPYD Mare Island is in the COMNAVSEASYSYSCOM chain of command; while WPNSTA Concord is under the cognizance of COMNAVSYSCOM and NSC Oakland is under COMNAVSUPSYSCOM. NAS Alameda is the only Activity that is in the same chain of command as some, although not all, of the ships homeported there. Both the Air Station and the aircraft carriers it homeports are under COMNAVAIRPAC. This separation in commands between the shore establishment activities themselves and between the shore establishment and the ships' type commands creates a fragmented administrative context for the fleet berthing functional system.

Shipbuilding, Conversion, Repair, and Overhaul

Naval Sea Systems Command (NAVSEASYSYSCOM), in conjunction with the operators, is responsible for scheduling regular maintenance and repair work on ships. There are three levels of ship maintenance and repair. The most complex is depot level work which includes overhauling most of a ship's systems. Next is intermediate level maintenance which includes repairs of problems that do not incapacitate the entire ship, but are still significant. The simplest is organizational level repair involving minor deficiencies.

Depot level repairs are performed either in Navy shipyards or by civilian contractors who have Master Ship Repair (MSR) certification. Intermediate level work can be done by a Navy Shore Intermediate Maintenance Activity (SIMA) or a civilian MSR contractor. Organizational level work is done by the ships' crews.

In the San Francisco Bay Area, Commander Service Group One, located at NSC Oakland, is responsible for defining what work should be done on each ship scheduled for maintenance and for authorizing the funds. NAVSEASYSYSCOM policy is to assign work to the lowest level to keep up maintenance skills of the crews and maintain as much self-sufficiency as possible. The Commander also decides which jobs will be done by the Navy and which by local contractors. National policy dictates that about 40 percent of all repair work should go to civilian contractors.

In the Bay Area there are no Navy shipyards that do depot level work on surface ships and this work is all contracted out to civilians.¹ Intermediate maintenance is sent to a Ship Intermediate Maintenance Activity (SIMA) unless all Navy facilities are full; then it goes to civilian contractors. There is currently one SIMA in the Bay Area, at NAS Alameda. A repair ship (like a destroyer tender) can also perform most intermediate level maintenance work. One tender is homeported at NAVSTA Treasure Island, but moves around the Region. This ship is currently working at NAS Alameda. If this ship is deployed at sea, another ship often comes up from San Diego to maintain the Region's repair capacity.

When the Commander Service Group One determines that maintenance work should be done by a civilian contractor, it then becomes the responsibility of the Supervisor

¹With few exceptions, NAVSHIPYD Mare Island works only on submarines.

of Shipbuilding Conversion and Repair (SUPSHIP) at Hunters Point. SUPSHIP uses an Invitation for Bid (IFB) process to contract out major work or unusual jobs that are done infrequently. For work that is done on a regular basis, such as rewinding motors, SUPSHIP will negotiate an annual contract with a certified Master Ship Repair (MSR) contractor at a fixed price for the work. These contracts are negotiated under the Commercial Industrial Service Program (CIS).

The ship maintenance and repair facilities in the San Francisco Bay Area are generally adequate for the Navy's current needs. However, there currently are no Navy dry docks in this area big enough to handle the CVN class air craft carriers. When the CVN homeported at NAS Alameda requires intermediate maintenance, it travels to Puget Sound to Naval Shipyard Bremerton. Since this is costly and disruptive for the crew, NAVSEASYS COM has decided to reactivate Dry Dock #4 at Hunters Point and create a controlled industrial area (CIA) so that in the next several years work on the CVNs will be done locally.

Planning

Operational planning for fleet berthing has its origins in the Congressional budgeting process and the Five Year Defense Plan (FYDP). This document establishes yearly funding levels for the Department of Defense. Within the Navy, the FYDP is paralleled by the Program Objective Memorandum (POM), which establishes by year the financial resources available to the Navy. The five year time frame of the POM is supplemented by an Extended Planning Annex which currently projects ahead to 1999.

The POM is used to develop the Ship and Aircraft Data Tables (SASDT), which list by year until 1992 the numbers and locations of ships and aircraft. Ships and aircraft are listed in the SASDT by class, not by hull number.

The POM is also used to derive the Navy Forecast of Homeports (S3111) which has a five year time horizon and is ship and year specific. The S3111 is revised every 36 months, and also reflects the Strategic Homeporting Plan prepared by Commander in Chief, U.S. Pacific Fleet. The POM, SASDT, and S3111 collectively establish the long-range operational planning framework for the ship berthing function.

Long-range facilities planning is primarily accomplished through the Military Construction (MILCON) Program. This program has a five year time horizon and encompasses that portion of the POM addressing capital improvements. Each unit of the shore establishment prepares a list of discrete MILCON projects necessary to meet its long-range commitments in support of operational requirements. The activity master plan is a principal vehicle for identifying and prioritizing MILCON projects.

Berthing

Homeporting. There are five activities currently homeporting ships in the San Francisco Bay Area. Four additional military activities in the Region have waterfront facilities with potential for homeporting additional ships. Table FB-2 shows the current ship assignments as well as basic characteristics of all nine activities. The discussion below summarizes the physical conditions at these activities, as well as proposed improvements. Additional information about berthing plans, existing and required utilities, military construction projects required for fleet berthing facilities, and long range berthing plans in the Bay Area, is available in

TABLE A8-2: Homeporting Facilities in the San Francisco Bay Region

Activity	No. And Type of Ships Homeported	Total Feet Of Berthing	Water Depth (MLLW)	Bridge Heights (MHW)	Nautical Miles to the Golden Gate	Comments
NAS Alameda	2 CVN 2 CGN 1 AD 2 AOPS (leaving in '85)	3,100	42 FT	Bay Bridge West Span 220 FT	9	currently only facility to berth CV/CVNs
NSC Oakland	2 AOR 6 MSC/PAC Cargo 2 AFS 1 AR 1 AD	7,800	30-35FT	Bay Bridge West Span 220 FT	7.5	none
NSC Alameda Facility	4 Coast Guard Cutters	2,000	33 FT	Bay Bridge West Span 220 FT	10	only refrigerated loading site
NAVSTA Treasure Island	2 NSO misc. yard craft	2,800	12-32 FT	Bay Bridge West Span 220 FT	7.5	wooden piers in poor condition
Naval SHIPYD Marine Island	4 Submarines	3,825	30-37 FT	Richmond-San Rafael Bridge 180 FT	25.5	overhead electrical cables clear 204ft
WPNSTA Concord	7 AEs	6,000	32 FT	Carquinez Bridge	36	none
Hunters Point	0	11,000	21-40 FT	Bay Bridge West Span 220 FT	11	limited berths are available at water depths sufficient for CVNs
NAVEDHSTA Stockton	0	63,000	30 FT	Benicia-Martinez Highway Bridge 135 FT	68	distance to Golden Gate too far for active use as homeport; good site for inactive ship berthing
Oakland Army Base	0	3,370	35 FT	Bay Bridge West Span 220 FT	8.5	none
NSC Oakland Ft. Molate Fuel Depot	0	552	35 FT	Richmond-San Rafael Bridge 180 FT	12	no support facilities for homeported ships

Source: WESTNAVFACENBOM. Ship Berthing Plan San Francisco Bay
WESTNAVFACENBOM. COMNAVSURFPAC & COMNAVAIRPAC Expanding Navy Program
SCA

"COMNAVSURPAC & COMNAVAIRPAC Expanded Navy Program EASTPAC" and the "Ship Berthing Plan San Francisco Bay Area." Both documents were prepared by Western Division Naval Facilities Engineering Command in 1983.

NAS Alameda - A major upgrade of Pier 3 was recently completed and this facility can now accommodate the CV and CVN class ships with full cold iron capability. Ongoing modernization of Pier 2 should be completed with FY 86 MILCON at a cost of approximately \$25,000,000. With these improvements Pier 2 will be able to handle an AOR, two CGN's, and one AD. NAS Alameda has a fuel pier and storage area and the only piers in the Central Bay capable of handling ordnance. NAS Alameda's airfield makes it possible for Air Wing groups preparing for deployment to fly into Alameda and be loaded onto the carriers by crane, rather than having to fly out to sea to meet the ships. The personnel support and housing facilities at the Air Station are excellent, making this activity the most popular berthing facility in the Region.

NSC Oakland - NSC Oakland can berth four service force ships, six Sealift Command vessels, and one transient ship. However, NSC Oakland is not an ideal berthing location for three reasons: (1) maneuvering into the berths is difficult; (2) there are no personnel support facilities for ship crews; and (3) there is a very small working apron with no laydown area.

NSC Oakland Alameda Facility - This facility primarily accommodates Coast Guard cutters as well as one transient vessel. Although the wharf is considered marginal, there are no plans to upgrade it.

NAVSTA Treasure Island - There are currently three wooden piers at NAVSTA Treasure Island, which are in poor condition. These piers can only be used for small vessels and are all scheduled for replacement. Construction of one new pier is expected to begin in FY85. This would provide additional berthing capacity for 7-8 reserve ships. Other planned MILCON projects would construct a Med moor at this new pier, build a new yard craft pier, rebuild the fuel pier and add a new Phase I SIMA in Hangar #3.

NAVSHIPYD at Mare Island - There are three finger piers on the south side of the Island used for berthing ships homeported both at Mare Island and at WPNSTA Concord. The expanded use of these piers for homeporting larger ships is limited by a 36 foot channel depth from San Pablo Bay into the shipyard and the main electrical transmission lines coming into the shipyard, which have only a 204 foot vertical clearance height at mean high water. There are two additional piers, Pier 34 and 35, at the Island's southern tip, which would require renovation, utilities installed and dredging before they could be suitable for berthing. There are plans to use pier 35 for ordnance handling.

WPNSTA Concord - This activity has three piers, two of which are used for ongoing station operations and transients. Only two of the seven ships homeported at WPNSTA Concord can be accommodated at the third pier. The other five ships are berthed at NAVSHIPYD Mare Island. The pier used for homeporting has been upgraded to full cold iron capability for the AEs. Access to WPNSTA Concord piers is limited to the 135 foot vertical clearance of the Benicia-Martinez Highway Bridge and the 32 foot depth alongside the pier.

Hunters Point - Although Hunters Point is currently inactive, it has considerable potential as an additional location for homeporting ships. Potential berthing facilities include 40 berths, each of which is 500 feet long, as well as six dry docks.

The most important asset at Hunters Point relative to the Navy's current needs is Dry Dock #4, which can accommodate the Nimitz class carrier. Most of the existing facilities would require considerable modernization, including lengthening some berths, upgrading cold iron capability, and replacing deteriorated fender piles. However, berths at this facility offer easy maneuverability and the water depth at some is sufficient to handle CVNs.

NAVCOMMSTA Stockton - Army reserve cranes and tug boats are currently berthed at this underutilized facility. The wharf is in good condition and is considered an acceptable location for inactive ships. To accommodate inactive ships, NAVCOMMSTA Stockton would need to upgrade wharfside utilities to provide enough power to run dehumidifiers for the ships. A maintenance facility, (nothing as extensive as a SIMA) would also be required.

Other Military Assets - The Oakland Army Base offers another potential location for homeporting ships in this Region. The base has three wharfs in good condition, all with a MLLW depth of 35 feet. In addition, there is plenty of maneuvering room for the ships and an extensive laydown area immediately adjacent to the wharfs. Although this facility is currently under lease to the Port of Oakland, the military still maintains some control over it.

NAVSTA Mare Island has currently unused pier assets (the former inactive ship maintenance facility) near the north end of the Island, and access has been enhanced by reconstruction of the Mare Island Causeway.

Point Molate, the NSC Oakland Fuel Depot, also has a pier, but this facility is only used for fueling ships. There are no utilities or other services that could support a homeported vessel.

In 1985, Naval Reserve Center Alameda will regain, from an expired lease, 6.25 acres of land located near the Park Street Bridge in central Alameda. This asset includes a recently upgraded pier capable of berthing Mine Sweeps or other small ocean going vessels.

The Coast Guard plans to construct berthing for its vessels at Government Island, with the consequence that space will become available at the Alameda Facility of the Naval Supply Center.

Transient Berthing. Transient ships routinely visit the Bay Area for several purposes, including maintenance, training, refueling or restocking, shore leave for crew members, and goodwill visits. When compared with ship homeporting, transient visits are characterized by shorter stays and fewer pierside services.

Transient ships can be assigned to any available pier. However, certain facilities are used only for transients. These include one pier at the NSC Oakland Alameda Facility which is dedicated for vessels moving refrigerated supplies, and two berths at WPNSTA Concord which are used only for ordnance handling. Commercial space can also be rented as required.

Support Services. When Navy ships come into port they require special services, such as tug boats, ordnance barges for off-loading and on-loading munitions, and fuel barges. In addition, these ships need equipment available to them at their berth, including brows, ladders, ramps, breasting camels, waste oil rafts, etc. To ensure the appropriate services are available on arrival, ships at sea will send a message to the

Port Services Office at NAVSTA Treasure Island. This office then contacts the Port Services Office at the activity where the ship is homeported and that office will make sure the equipment is available. The local activity's Port Services Office will also assign the ship to a berth. It will send confirmation of equipment availability, as well as berth assignment, back to the Port Services Office at NAVSTA Treasure Island, which will relay the information to the ship.

When ships in port are getting ready to deploy, they rely on NSC Oakland for support services in terms of purchasing food and supplies. NSC Oakland will handle all procurements. The individual vendors bring their merchandise, via truck, directly to the berth for loading onto the ships.

Harbor Systems

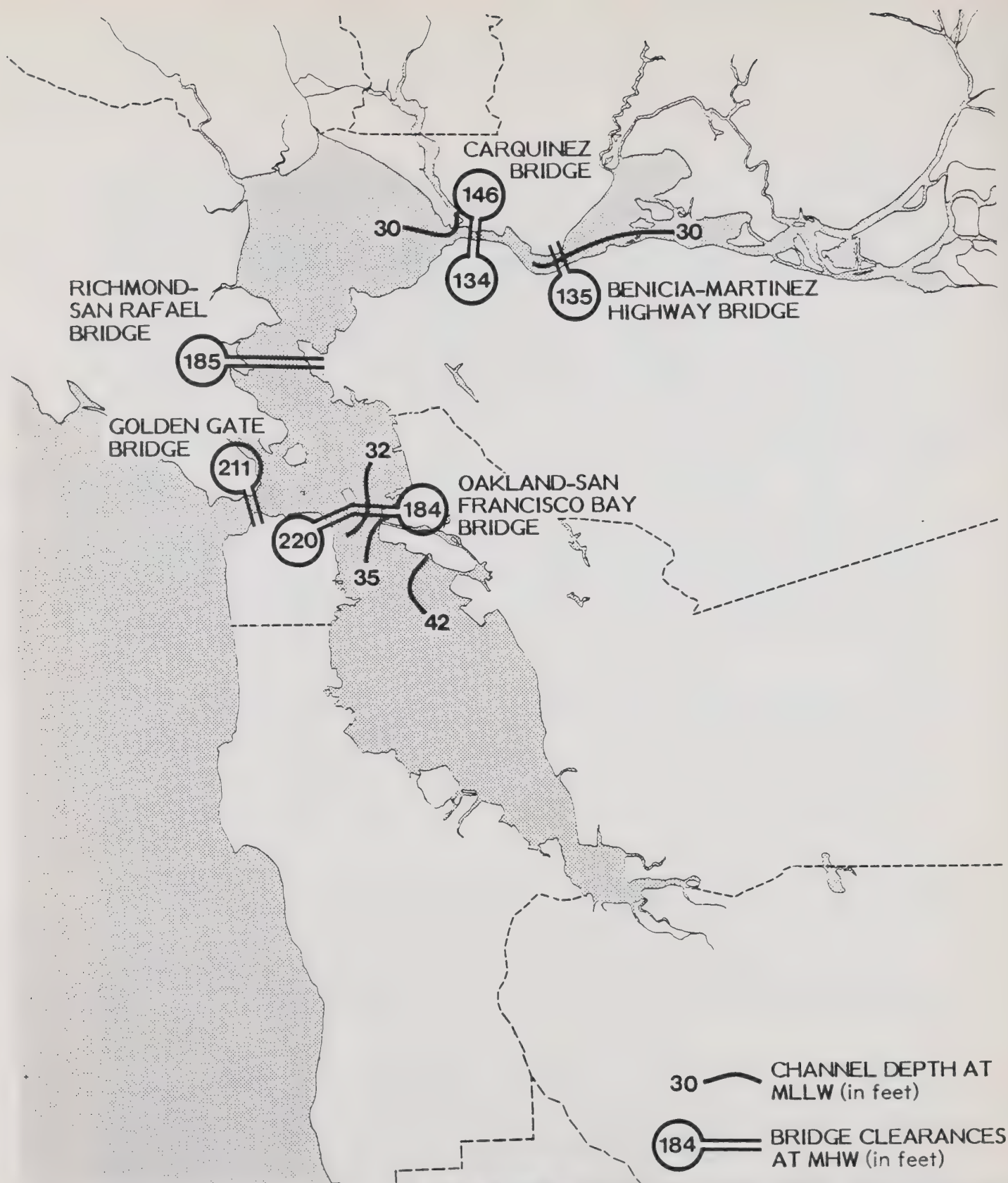
Vessel Traffic Control. All vessel traffic in the San Francisco Bay is regulated by the Twelfth Coast Guard District. Because the Bay is intensively used by recreational and commercial vessels of all sizes, a Vessel Traffic System (VTS) is in effect with prescribed traffic lanes and traffic flow directions. The VTS starts outside the Golden Gate at the beginning of the main channel coming into the Bay and extends into the approaches to each port. Only ships over 300 gross tons are required to follow the VTS; however, smaller ship and boat operators are expected to be aware of the rules.

Harbor Capacity. Several major West Coast ports are located on San Francisco Bay, creating large volumes of vessel traffic on the Bay. If the traffic were to reach the Bay's maximum capacity, this could create a problem for Navy ships trying to maneuver into their berths. The Metropolitan Transportation Commission (MTC) estimates that even at the highest projected traffic volumes, vessel traffic in the Bay, as well as in the adjacent channels, will not exceed the harbor's total capacity through 2000.²

Although MTC's analysis of harbor capacity indicates that civilian vessel traffic will not impair Navy ships operating in the Bay, there are other physical constraints to the Bay's waterway system that may limit ship operation in certain areas. These constraints, water depth and bridge heights, are shown on Figure FB-1. The main ship channel coming through the Golden Gate is 55 feet deep at Mean Lower Low Water (MLLW). Inside the Bay, the water is as deep as 100 feet in some places but in other places it is very shallow. Dredging is required to retain adequate channel depth for access to all Navy port activities, except Hunters Point.

Bridges can also be a factor limiting access to certain parts of the Bay. All ships coming into the Bay must pass under the Golden Gate Bridge which is 232 feet above the water at Mean High Water (MHW). As Table FB-3 shows, none of the ship classes homeported in this Region have mast heights exceeding this height. The west span of the San Francisco-Oakland Bay Bridge is 220 feet high which is also sufficient for even the tallest masts. However, there are some ships that cannot pass under Richmond-San Rafael Bridge, with a 180 foot clearance, or the Benicia-Martinez Highway Bridge, which has a 135 foot clearance.

²Metropolitan Transportation Commission, "Harbor Capacity Analysis," July, 1978.



**Figure FB-1
FLEET BERTHING
CONSTRAINTS**



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

Table FB-3: Ship Classifications/Dimensions

<u>Type Class</u>	<u>Standard Classification</u>	<u>Length</u>	<u>Max Draft</u>	<u>Beam</u>	<u>Mast Height</u>
Attack Carrier	CV	980	36	121	Varies
Attack Carrier Nuclear	CVN	1,060-1,123	38+	133	205
Combat Store Ship	AFS	581	24	79	127
Fast Combat Support Ship	AOE	795	35-40	107	131
Replenishment Oiler	AOR	659	34	96	129
Oiler	AO	587	34	88	Varies
Tender	AD	644	27	85	Varies
Repair Ship	AR	529	24	74	119
Ammunition Ship	AE	512-565	26-29	72-81	144
New Cruiser and Destroyer Types	CG/DD 963	564	33	55	Varies
Frigate Types	FF/FFG-7	446	26	47	Varies
Amphib Cargo Ship	LKA	564	26	76	118
Mine-Sweeper Ocean	MSO	165	14	36	60
Military Sealift Command Pacific	Various	455+	35	60+	Varies
Coast Guard Cutter	WHEC	378	19	43	117

Source: WESTNAVFACENGCOM

Dredging. Some ship channels in the Bay's waterway system are naturally deep enough to accommodate all ships. However, key channels, including the San Francisco Bar Channel, which is just outside the Golden Gate, and entrance channels to all Navy activities with fleet berthing facilities, must be routinely dredged to maintain appropriate depths. The Army Corps of Engineers (COE) is responsible for maintaining the major ship channels through the Bay, while the Navy is responsible for the channels leading to its activities. The COE is in the process of executing a three phase project to improve certain channels throughout the Bay. Phase One was the deepening of the San Francisco Bar channel to about 70 feet. Phase Two, which is currently in the planning stage, involves deepening two channels in the Richmond harbor area. Phase Three would involve deepening the channels out to Stockton from 35 to 45 feet. The feasibility of this phase is still under consideration and there is no firm indication as to when it would begin.

The Navy's dredging program has, in the past, been carried out by individual activities with no centralized coordination. Some activities, like the Naval complex at Mare Island and NAS Alameda, have very fast siltation build-up in their channels and must dredge frequently. Other activities with waterfront facilities have less of a problem, but do require occasional maintenance dredging.

Recently, WESTNAVFACENGCOM has taken on responsibility for coordinating all Navy dredging projects in the Bay Area. Coordination responsibilities will include developing a data base to determine when hydrographic surveys or actual dredging will be required for each activity. WESTNAVFACENGCOM staff will also oversee the necessary permit procedures, design responsibilities, and all contract negotiations with companies who will do the actual work. The objective in creating this coordinated dredging program is to cut down on the time it takes to get projects completed and to streamline the permitting process with the COE.

Projected Changes in Navy Fleet Berthing Requirements and Berthing Facilities

Strategic Homeporting. In the past four years two major occurrences have resulted in a plan that could increase the current number of ships homeported in the San Francisco Bay Region. The first event is the goal of the current Presidential administration to increase the Navy from its 400 ship strength five years ago to a 600 ship Navy in the next four years. The second event was a policy decision made by the Chief of Naval Operations to adopt "strategic homeporting." The goals of this new policy include: dispersal of forces, battle group integrity, industrial base utilization, logistics support, and climatic considerations as they relate to the assignment of ships to homeports.

As a result of these two policy decisions the Navy's total number of ships will not only increase but the ships will be dispersed more evenly throughout the nation's available ports. On the Pacific Coast these policies will result in the relocation of ships currently homeported in San Diego to the San Francisco Bay, Puget Sound, and Long Beach. The exact details of this strategic homeporting plan stating which ships will go where have not been finalized yet, although an Environmental Impact Study (EIS) has already been started to assess the impacts of the plan on NAVSTA Treasure Island. As part of this process, three alternative homeporting plans for the Bay Area have been developed.

The first alternative would be to maintain the existing homeporting plan as shown in Table FB-2. The second alternative would be to put four reserve frigates and a new pier at NAVSTA Treasure Island as well as one deep draft combatant (not an aircraft

carrier) at NAS Alameda. In addition, several piers would be upgraded and other improvements made, including creating a new SIMA facility at NAVSTA Treasure Island. All of the proposed projects for Alternative 2 are included on Table FB-4. Alternative 3 would entail assigning thirteen new ships into the Bay Area. Twelve would go to NAVSTA Treasure Island, requiring two new piers and a Med mooring. The remaining ship would go to NAS Alameda. Additional changes and upgrades are shown on Table FB-5.

Potential Alternative Berthing Facilities - Hunters Point. Hunters Point was closed in 1974 as part of the Navy's realignment following the Vietnam War. The facility has remained under Navy ownership but most of it is currently outleased to Triple "A" Machine Shops, Inc., a privately owned ship repair and conversion operation.

NAVSEASYSKOM will reactivate Dry Dock #4 at Hunters Point to accommodate CVNs homeported in the Bay Area requiring intermediate maintenance. NAVSEASYSKOM would rather drydock the CVNs locally than send them up to Puget Sound and dislocate the crews' families. If this plan proves feasible, the first carrier will probably go into drydock in 1986.

The current strategic homeporting plan indicates that most new ships coming to the Region will be stationed at NAVSTA Treasure Island. But, if Hunters Point were to be reactivated, it would offer an alternative to Treasure Island, which itself has serious problems as a berthing facility (see Operational Analysis discussion below).

Oakland Army Base. Historically, the Army owned three wharfs in the Oakland Harbor which were jointly managed by the Army and Navy for shipping supplies overseas. When the Army decided it no longer needed this facility, it was leased to the Port of Oakland. The water depths, maneuvering space, and wharf sizes would make this a suitable location for homeporting ships. While the Army has not chosen to make this facility available to the Navy in the past, perhaps it would reconsider this decision in the future.

OPERATIONAL ANALYSIS

Current Conditions

Utilities. Most berthing facilities in the San Francisco Bay Area were built during World War II and do not have sufficient utility capabilities to meet the cold iron requirements of modern ships. This problem is exacerbated by recent Navy policy allowing ships at pierside to operate without using their own power plants, and by the increased power requirements of the bigger, more sophisticated ships. A full list of the utilities required at Bay Area Berthing facilities and the timeframe for their implementation is included in the "COMNAVSURFPAC & COMNAVAIRPAC Expanded Navy Program."

Personnel Support Facilities at NSC Oakland. NSC Oakland has limited amounts of personnel support and recreation facilities to accommodate the military personnel assigned to ships homeported at that activity.

Table FB-4: Proposed Fleet Berthing Alternative 2

NAVSTA Treasure Island:	4 Additional Ships (FF Reserves) P-503 New Pier 1 P-606 Sima
NSC Oakland:	P-082 Dredging P-012 Upgraded Wharves, Utilities Pt. Molate Fuel Pier Improvements
NAS Alameda:	1 Deep Draft Combatant not CV P-204 Upgrade Pier 2 Utilities P-202 Dredging and Breakwater Closure
NAVSHIPYD Mare Island:	P-257 Dredge and Repair Pier 35 Upgrade Lights and Fire Protection

Table FB-5: Proposed Fleet Berthing Alternative 3

NAVSTA Treasure Island:	12 Additional Ships 4FF, 4FFG & 4 Cruiser/Destroyer P-503 New Pier 1 P-606 Sima P-605 New Pier 2 P-610 Tender Mediterranean Moor P-611 Sima Improvements
NSC Oakland:	P-082 Dredging P-012 Upgrade Wharves, Utilities Pt. Molate Fuel Pier Improvements
NAS Alameda:	1 Deep Draft Combatant not CV P-204 Upgrade Pier 2 Utilities P-202 Dredging and Breakwater Closure 750' Gap - 50' MLLW
NAVSHIPYD Mare Island:	P-257 Dredge and Repair Pier 35, Upgrade Lights and Fire Protection

SIMA/NRMF Operations. Fleet expansion plans include constructing a SIMA/NRMF facility at NAVSTA Treasure Island. No decision has been made as to whether this would mean moving the current SIMA from NAS Alameda to Treasure Island or whether there will be a single command operating out of both locations. If the command operates at both locations vehicular access between them could be a problem because of congested traffic conditions on the San Francisco-Oakland Bay Bridge.

Waterfront Facilities at NAVCOMMSTA Stockton. Distance is the single most important factor prohibiting COMNAVSURFPAC from using NAVCOMMSTA Stockton for homeporting ships. However, this facility has 6,300 LF of waterfront that currently berth two Army reserve floating cranes and several tug boats. These uses are far below the wharf's capacity and some alternatives should be developed to better utilize this valuable resource. Two possible uses would be for inactive ships or for a new Hospital ship currently under construction.

NAVSTA Treasure Island. There are three major constraints to increased homeporting at NAVSTA Treasure Island. The first is limited space adjacent to the waterfront for lay down area and other support activities. Second, the Island has traffic access problems which will worsen with the completion of development proposed by the City of San Francisco. Third, it has a highly exposed utility access system, which would be subject to severe damage from an earthquake and/or seismic sea wave.

Future Conditions

The existing berthing facilities in the Bay Area do not have excess capacity with which to accommodate the projected demand for berthing associated with the proposed Fleet expansion. A few additional berths may become available as discussed in the previous section on Fleet berthing potential. However, most of those locations have physical or logistical constraints making them inappropriate for homeporting ships. This means that the Navy will have to undertake construction of new piers to accommodate any additional ships requiring berthing.

The proposed strategic Homeporting Plan currently envisions building all the necessary piers at NAVSTA Treasure Island. However, analysis of current conditions on the Island indicate that it has major operational constraints, including traffic conditions on the San Francisco Oakland Bay Bridge, limited real estate availability, and susceptibility to seismic damage and tsunami inundation, which suggest that construction of additional pier facilities beyond that contemplated by MILCON P-503 is inadvisable.

When the decision was made to put the new piers at NAVSTA Treasure Island, this appeared to be the best possible solution. Every other operating activity with Fleet berthing capability had even greater limitations. With the decision to consider reactivating portions of Hunters Point, conditions have changed. Hunters Point, although it too has limitations, seems to be a good potential site for the new Fleet berthing facilities required to meet the needs of the Strategic Homeporting Plan. Water depths at Hunters Point can handle all size ships, including the CVNs. Transportation access is good, and there is sufficient room for appropriate onshore support activities, including housing.

The present five year term of the Triple A lease expires in June 1986. No later than a year prior to this date, NAVSEASYS COM will commence negotiations with Triple A regarding the conditions of the next five year lease term. In order to be in an

effective negotiations position, as well as to fully preserve the Navy's substantial homeporting options at this facility, the Naval shore establishment of the Region, in conjunction with higher authorities, needs to make explicit decisions regarding the role of Hunters Point in the Regional Berthing Plan. In addition to the upcoming lease negotiations, these decisions need to be timely because an expanded homeporting role for Hunters point has implications for the role of Treasure Island.

The Oakland Army Base also has potential for homeporting ships. However, this facility, even if it were to be available to the Navy, does not present as good a possibility for support facilities as Hunters Point because it is in an industrial neighborhood.

REGIONAL ISSUES AND OPTIONS

Issue 1: Not all homeporting activities have sufficient berthing and/or community support facilities to accommodate the ships currently assigned to them. This problem is most pronounced at NSC Oakland and WPNSTA Concord.

Options:

- (a) Maintain status quo.
- (b) Upgrade support facilities at NSC Oakland.
- (c) Build new pier at WPNSTA Concord to accommodate all ships homeported there.

Issue 2: Some piers lack sufficient utilities to provide adequate cold iron capabilities, thus limiting the Regional flexibility for moving ships among berths.

Options:

- (a) Maintain status quo.
- (b) Upgrade pier utilities as quickly as possible (this is already underway).
- (c) Change administrative policy of providing complete cold iron capability at homeport piers and require ships in port to operate their plants.

Issue 3: NAVSTA Treasure Island has several limitations as an appropriate site for the additional fleet berthing facilities required to accommodate the proposed Strategic Homeporting Plan.

Options:

- (a) Maintain the status quo.
- (b) Develop mitigation measures to offset the problems with transportation access to the Island, seismic conditions, and tsunami hazards.

- (c) Reactivate Hunters Point to provide the needed berthing capacity for the new ships.
- (d) Negotiate with the Army and the Port of Oakland to gain access to the Oakland Army Base wharfs as additional berthing space for homeporting some of the new ships.

V. AVIATION

OVERVIEW

Objectives

The general objectives of the aviation functional system in the Bay Region are fourfold. A primary objective is to provide the West Coast base of operations for antisubmarine patrol flights conducted by the Navy. Two, the Region serves as homeport for the two nuclear powered aircraft carriers assigned to the Pacific Fleet. A third objective is the overhaul and maintenance of aircraft. Finally, the Region is a major air reserve training facility.

General Characteristics

In accomplishing the objectives described above, the aviation functional system is focused at three locations within the Region--Naval Air Station (NAS) Alameda, NAS Moffett Field, both located within the heavily urbanized central core of the Region, and to a lesser degree Naval Auxiliary Landing Field (NALF) Crows Landing, located in the agricultural Central Valley.

Alameda is the centerpiece of this function because it comprises an interlocking triumvirate of facilities, two of which need the others to optimally function. These facilities are a deepwater pier capable of berthing the Nimitz class attack carrier, an airfield which enjoys excellent flying weather, and a depot level aircraft maintenance facility. The carrier pier must be geographically proximate to the airfield so that carrier based aircraft can fly in and be lifted on board deploying carriers, and to the maintenance depot so that it may directly receive off-loaded damaged aircraft. The airfield needs the carrier pier and access to its homeported units for training of its reserve units, who in turn require the back-up maintenance support provided to its intermediate maintenance department by the maintenance depot. The maintenance depot needs access to the airfield to receive operational aircraft requiring routine overhaul and to the carrier pier to receive disabled aircraft requiring major repair or overhaul.

More than any of the other functional systems, the history and development of aviation within the Region demonstrate how close interaction with the civilian community can significantly influence the Navy's ability to perform its shore-based missions.

Since the commissioning of NAS Alameda in 1940 and the recommissioning of Moffett Field in 1942, they have felt the influence of the surrounding community. In part as the result of its noise and safety impacts on the community, the role of the Alameda Air Station changed in the post-Korean War period from supporting active fleet squadrons and patrol aircraft to its current function of proving support for aircraft carriers, major combatants, and reserve air squadrons. Jet aircraft were introduced at the then relatively isolated Moffett Field at the time of the Korean War and became the station's main activity. However, urbanization in the San Jose metropolitan region during the post-war period removed the isolation of Moffett Field and complaints of noise, as well as conflicts with civilian aviation, forced consideration of relocating jet operations to a less urbanized area. This resulted in

the construction of Naval Air Station Lemoore and transfer of jet operations from Moffett to Lemoore in 1961. Today, Alameda faces the challenge of preserving its flight operations capability in the face of aggressive development programs proposed by the Port of Oakland and adjacent cities, which could impinge on AICUZ policies established by the NAS. Moffett Field has and will continue to be subject to pressures to share its facilities with the civilian community under the "joint use program." More importantly, both facilities must compete for access to the Regional airspace which is projected to reach capacity sometime before 1997. The future of aviation in the Bay Region will in a large measure be determined by the character of the interactions between Alameda, Moffett Field and the civilian community.

Closely related to its high degree of interaction with the civilian community is another distinguishing characteristic of aviation, its public visibility. Both NAS Alameda and Moffett Field are located within densely populated urban areas. Flight operations associated with these facilities, as well as harbor transits by aircraft carriers, are constant reminders to the public of the Navy's presence in the Region. In a real sense, the aviation function represents the Navy to the community.

REGIONAL CONTEXT

Relationships to Other Functional Systems

Links between the aviation functional system and other systems are shown in Table AV-1. Aviation is closely related to the fleet berthing, POL, and supply systems.

Relationships with the Civilian Community

Among all functional systems, aviation has the closest relations with the civilian community. First and foremost, this functional system must have access to the Region's airspace which is controlled and dominated by the civilian community. Naval aviation is a major civilian employer. Over 8,000 civilians are employed in Naval aviation work and over half of this number are employed by the Naval Air Rework Facility at NAS Alameda. The nature of aircraft operations and their associated noise and safety impacts on lands not under federal control requires the aviation function to be cognizant of and responsive to land use and development trends in the civilian community. Finally, aviation is subject to civilian pressure to make its facilities available for joint use by civilian general aviation aircraft. A recently completed Department of Defense/Department of Transportation study on the joint use potential of military airfields recommended against joint use at Moffett Field. However, this recommendation by no means permanently resolves this issue.

OPERATIONAL ELEMENTS

Organization

As noted in the Overview section, the aviation functional system in the Bay Region is multi-faceted. This characteristic is reflected by the function's organization

Table AV-1: Relationship of Aviation to Other Functional Systems

<u>Functional System</u>	<u>Affected Activities</u>	<u>Type of Support Provided (P) or Received (R)</u>
Communications	NAS Stockton	P - Location of Naval Telecommunication Station
Fleet Berthing	NAS Alameda	P - Berthing for two nuclear aircraft carriers
Ordnance	NAS Alameda, Moffett Field WPNSTA Concord	P - Secondary ordnance st point R - Ordnance and ammunition
POL	NSC Fuel Department Point Molate NAS Alameda, Moffett Field	R - Jet turbine propulsion fuel P - Secondary POL storage point
Supply	NARF Alameda NSC Oakland	R - Material support P - Repaired components for reissue
Training	NAS Alameda Moffett Field	P - Facilities for reserve air training
Facilities Maintenance	PWC San Francisco Bay Oakland	R - Public works support
Health Care	NAVHOSP Oakland	R - Medical care for NAS personnel
Housing	PWC San Francisco Bay Oakland NAS Moffett Field	R - Housing for NAS personnel
Personnel Services	NAS Alameda and Moffett Field	R - Commissary and exchange services for NAS personnel

structure, which is illustrated in Figure AV-1. Although there is some overlap, each of the various components of this organization performs a unique aspect of the overall aviation function. The following discussion examines each component of this organization and lists the operational element(s) each controls. These operational elements are in turn described below in separate sections.

Naval Air Station (NAS) Alameda. NAS Alameda, in addition to providing airfield facilities, provides berthing for the two homeported aircraft carriers. This combination gives the Air Station a capability which on the Pacific Coast is shared only by Naval Air Station North Island in San Diego; that is, the ability to transport arriving aircraft a short distance from airfield to the carrier pier and then lift them aboard the carrier, which is the preferred pre-deployment procedure. Conversely, upon completion of deployment, disabled aircraft can be off-loaded at the pier and directly transported to the Naval Air Rework Facility.

Naval Air Rework Facility (NARF). As shown by Figure AV-1, the NARF, although located at Naval Air Station Alameda, operates within a chain of command completely independent of the Air Station. NARF Alameda is one of two depot level Navy aircraft maintenance facilities on the Pacific Coast; the other is located in San Diego, California.

About 100 aircraft per year go through major maintenance at the facility. One third of this number are Grumman A-6 Intruder and EA-6B Prowler aircraft. The bulk of the remaining maintenance work is on Lockheed P-3 Orion, and the Lockheed S-3 carrier based antisubmarine warfare aircraft. NARF Alameda also maintains all of the remaining McDonnell Douglas A-3 Skywarrior aircraft in the Navy inventory.

Flight operations performed by NARF at NAS Alameda are primarily for the purpose of flight testing completed aircraft prior to return to the client Command. NARF also conducts in and out-of-airframe engines testing. The out-of-frame testing is normally conducted in special buildings which are designed to acoustically attenuate the noise. In-frame engine testing is currently conducted out of doors.

Naval Air Reserve (NAVAIRES) Alameda. NAS Alameda is also the location for another organizationally independent component, training of reserve aviation personnel. NAVAIRES is the nation's single largest air reserve activity and is responsible for the logistical support and administrative coordination for the training of pilots and crew assigned to Naval Air Reserve and Marine Corps Air Reserve units in the Region. NAVAIRES is itself assigned six Naval reserve and two Marine Corps reserve squadrons. Naval Air Reserve Center Moffett Field reports to NAVAIRES, who in turn reports to Commander Naval Air Reserve Force.

Naval Air Station (NAS) Moffett Field. The turboprop powered Lockheed P-3 Orion aircraft patrol coastal waters of the United States to track submarine movements. NAS Moffett Field is the home of all Navy shore based patrol aircraft on the west coast of the United States. Aircraft squadrons of NAS Moffett Field based P-3's are assigned, on a rotational basis, for patrol duty outside of the continental United States.

Commander Patrol Wings Pacific. In addition to serving as the home base for ASW patrol aircraft, NAS Moffett Field provides facilities for its immediate superior in the chain of command and the operational commander of these patrol aircraft, Commander Patrol Wings Pacific. This is the only instance in the Bay Region where a shore establishment activity need not go outside the Region to communicate with the next higher echelon of command.

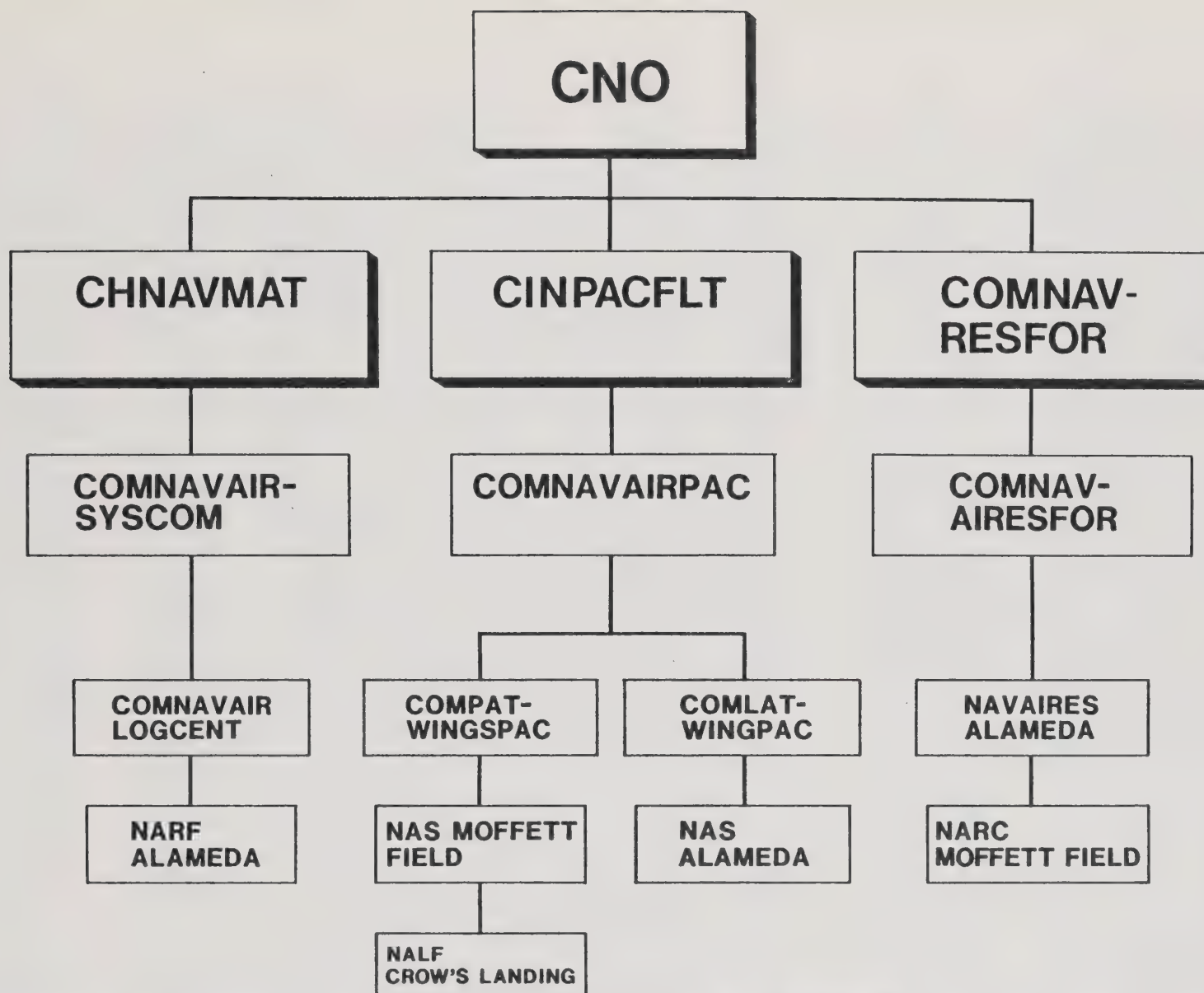


Figure AV-1
**ORGANIZATION OF AVIATION
 FUNCTIONAL SYSTEM**



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
 SAN FRANCISCO BAY AREA
 NAVAL SHORE ACTIVITIES**

Naval Auxiliary Landing Field (NALF) Crows Landing. NALF Crows Landing comes under the command of NAS Moffett Field and is located 53 miles east of the air station. Aircraft are not based at NALF Crows Landing. It is used primarily as a practice landing field for the P-3 pilot training; however, NASA conducts test flights and other Navy Air Stations utilize the airfield at Crows Landing for Fleet Carrier Landing Practice (FCLP) training.

Scheduling of air operations at NALF Crows Landing is controlled by NAS Moffett Field, and the level of air operations at NALF is directly related to those at NAS Moffett Field. Because of noise abatement policies at NAS Moffett Field, NALF Crows Landing is used for almost all touch-and-go landing practice accomplished by the pilots stationed at the Air Station.

Naval Air Reserve Center (NARC) Moffett Field.

NARC is assigned one reserve ASW patrol squadron. Although located at NAS Moffett Field, it reports to NAVAIREs Alameda.

Airports

The three Navy airfields in the Bay Region are a small portion of a larger Regional airport system comprising 4 air carrier airports, 27 general aviation airports, and 2 other military airfields. These 5 military facilities are briefly described below.

Naval Air Station Alameda. The air station has two runways. Runway 13/31 (aligned northwest-southeast) is 8,000 feet long; and Runway 7/25 (aligned east-west) is 7,200 feet long. Both runways are 200 feet wide. All runway operational directions, except for Runway 7, are served by Ground Control Approach (GCA) radar, and all four are equipped with arresting gear.

Approach and departures via Runway 31 are conducted over water. The nonexistence of ground obstructions and minimal noise impact on populated areas make it the preferred operational direction. Runway 31 accommodates 57 percent of all arrivals and departures of aircraft at the Naval Air Station. All jet aircraft touch-and-go landings and FCLP operations are conducted over water using this runway.

Departures from Runway 25 are over water. The approach is conducted over parts of the Oakland Hills residential area and business district areas such as the Oakland Inner Harbor, Jack London Square and Mariner Square. These obstructions necessitate a 3.5 degree approach to Runway 25 despite an established 3.0 degree maximum glide path for landing aircraft. Weather ceiling minimums for this runway have also raised significantly. Percentage of utilization of Runway 25 is 39 percent. It is used only when strong westerly winds, usually occurring during the warmest months of the year, prevent safe landings on Runway 31. The only touch-and-go operations performed on Runway 25 are by helicopters.

The flight pattern used for Runway 13 is such that aircraft are kept over water during approach. This runway is used only at times of southwest wind. This unusual wind direction most often occurs before and during winter storms. Percentage utilization of Runway 13 is four percent. Runway 7 is not used for departures.

Aviation facilities at Alameda also include 469,700 square yards of aircraft apron parking, two helicopter landing areas, and seven aircraft maintenance hangars.

Naval Air Station Moffett Field. The station has two parallel runways. Runway 14L-32R, which is instrumented, serves as the primary runway, measuring 9,200 feet long and 200 feet wide. Runway 14R-32L is the secondary runway, also 200 feet wide and measuring 8,124 feet for takeoffs and 7,517 feet for landing because of a displaced threshold. Both runways have obstructions to the transitional surfaces because of the heights of Hangars 1 and 2. Hangar 3 also violates this criterion -- however, less severely. The runways are separated by 625 feet, which however does not meet the standard of 700 feet, thereby preventing simultaneous operations even under visual flight regulations (VFR) conditions.

Airfield facilities at Moffett also include 472,300 square yards of aircraft parking apron and four aircraft maintenance hangars.

Naval Auxiliary Landing Field Crows Landing. The airfield has two concrete runways. Runway 17/35, the northeast-southwest runway, is 8,000 feet by 200 feet and has 1,000 feet of overrun on each end. It is intersected at approximately one-third of its length by the northwest-southeast Runway 12/30, 7,000 feet long. Both runways are stressed to accommodate single tire aircraft up to 59,000 pounds wheel loading.

Crows Landing also has 1,689 square yards of aircraft parking apron. However, it is without hangar or aircraft maintenance space.

Former Hamilton Air Force Base. Hamilton Air Force Base was decommissioned in 1974. At that time, 276 acres and later 80 additional acres (acreages approximate) were transferred to the Navy to manage as Department of Defense military family housing. In June 1983, 750 acres of the former Hamilton field property were formally transferred to the Army, including the 8,000 foot runway and taxiways, a large portion of the lowland area north of the runway, and a large apron area around Hangar 86. The Army maintains one active disaster response unit and two reserve center units with approximately 25 small aircraft and helicopters stationed at the base.

In May of 1983, the "Hamilton Roundtable" was formed -- consisting of the City of Novato, at times the County of Marin, the Oakland Port Authority, the Metropolitan Transportation Commission, the Bay Conservation and Development Commission, the Aircraft Owners and Pilots Association, the Marin Coalition, the state of California and the federal government. The purpose of the discussions was to determine whether civilian aviation use could be made at Hamilton and to attempt to settle the litigation involving Hamilton.

The City of Novato has recently initiated development of an airport master plan which will be used as an application to the United States Army for the purpose of establishing a joint civilian/military presence at Hamilton Air Force Base. The joint use program will be subject to ratification through a ballot measure of the City of Novato in November of 1984.

Regional Air Traffic Control and Airspace Capacity.

The instant Naval aircraft in the Bay Region leave the ground, they enter the FAA air traffic control system. Figure AV-2 depicts the demands placed on the Region's airspace by civilian and military aviation. Almost all the air carrier and military flights in the Region are conducted under instrument flight rules (IFR), while most general aviation flights follow visual flight rules (VFR).

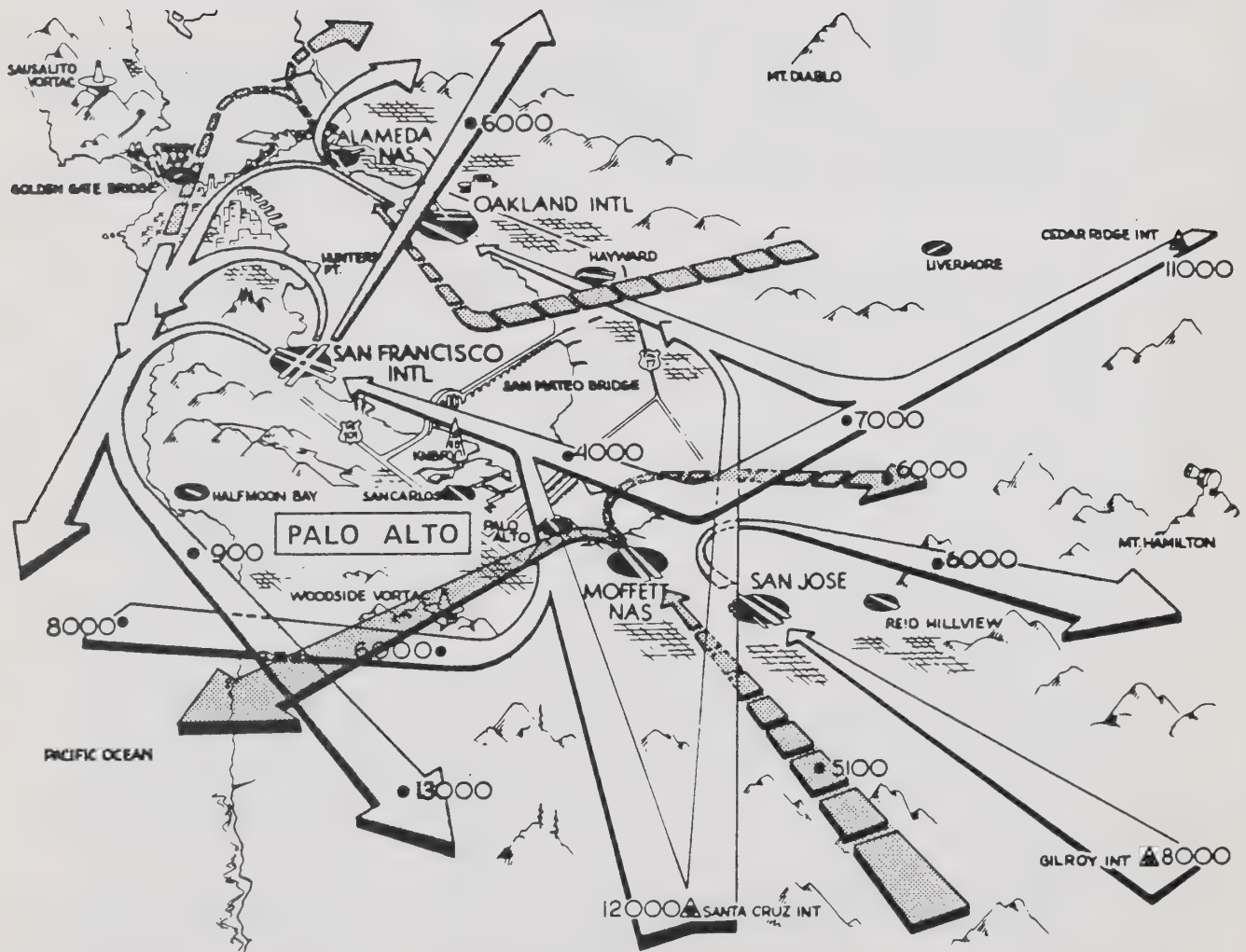


Figure AV-2
CIVILIAN AND MILITARY
USE OF REGIONAL AIR
CORRIDORS



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

IFR Operations. Prior to entering a Regional airspace, IFR arriving aircraft are cleared by Air Route Traffic Control Center (ARTCC) for descent to altitudes between 6,000 feet and 11,000 feet, depending on entry point. Upon entering Regional airspace, air traffic control is transferred from ARTCC to Bay Terminal Radar Approach Control (TRACON) which is responsible for directing arriving aircraft to a final approach course to the destination airport. This direction is provided by radar vectoring of the aircraft. Arriving aircraft are segregated from departing aircraft on routes that are separated at least three miles horizontally and/or 1,000 feet vertically. While under TRACON, aircraft descend to approximately 2,000 feet and at about five nautical miles from the runway, TRACON gives clearance for final approach. At this point, the aircraft contacts and receives guidance from the control tower of the destination airport.

Two major air traffic flow plans have been established within the TRACON airspace to respond primarily to weather conditions. The "West Plan" is based on prevailing wind direction and velocity, while the "Southeast Plan" is used when strong southerly winds are experienced. Bay TRACON is responsible for determining when to shift air traffic flow from one plan to the other and notifying Regional Airports.

Given the close geographic proximity of the Region's airports, IFR aircraft operations at individual airports cannot be conducted independently, and there is some degree of interaction between civilian and military airports. IFR arrivals at Runway 25 at Naval Air Station (NAS) Alameda limit departures from Runways 27L or 27R at Oakland International. When weather is below circling approach minimums, approaches to Runway 25 at NAS Alameda and Runway 27 at Oakland must be staggered to ensure that missed approach airspace will be available if needed. When the Southeast Plan is in effect, IFR departures from Palo Alto Airport interact with arrivals to NAS Moffett Field. Currently, the number of IFR departures from Palo Alto is limited and this interaction is not significant. A shift in runway usage at San Francisco International Airport will shift the active runway designation at many airports, including both NAS Moffett Field and NAS Alameda.

VFR Operations. VFR flights are not controlled by the air traffic control system except in the airport traffic areas and the San Francisco Terminal Control Area (TCA). The TCA was established for greater control over the mix of high performance air carrier aircraft with low performance general aviation VFR aircraft.

When VFR conditions are in effect and outside of the San Francisco TCA and airport traffic areas, aircraft are free to navigate by visual reference and without interaction with the TCA. Airspace for uncontrolled VFR flight in the Region is severely limited by terrain, the San Francisco TCA, and the number of airport traffic areas. These limitations tend to channelize VFR traffic in certain areas. During times when low ceilings prevail, these limitations increase.

Airspace Capacity. According to the Regional Airport Plan, in 1997 there will be an IFR demand of nearly 200 aircraft per hour in the Region's airspace system in the peak hour of the average day.¹ Under the present airspace configuration, capacity is approximately 85 aircraft per hour in IFR weather conditions which occur about 8 percent of the year. Approximately one-third of this forecasted demand will be from general aviation and military aircraft operations.

¹Regional Airport Plan, 1980, page 105.

Table AV-2, which compares 1997 IFR demand with airspace capacity and is taken from the Regional Airport Plan, illustrates this projected excess of supply over demand. This table also shows how the demand capacity relationship would be affected by the institution of various airport system alternatives. Even under the most favorable alternative, Regional airspace would still be operating at capacity during the peak period on an average day of operations. But as noted in the Regional Airport Plan, peak day, as opposed to average day, demand in 1997 will cause Regional airspace to become even more congested than shown in Table AV-2. When peak day demand is taken into account, the Regional Airport Plan concludes that demand will regularly exceed capacity well before 1997.² The projected excess of demand over capacity in IFR weather will result in significant congestion in the Regional airspace, and delays to aircraft as high as 90 minutes will occur.

Table AV-2 also compares demand with capacity during VFR2 weather. Under these conditions, which occur about 13% of the year, Regional airspace is projected to reach capacity by 1997 under the status quo alternative. During the remainder of the year (except when IFR apply), demand will seldom exceed supply.

Aircraft Carrier Berthing

Naval Air Station Alameda is the homeport for the two nuclear powered attack carriers which with four other conventionally-powered carriers comprise the carrier assets of the Pacific Fleet. When in port, these two ships can be simultaneously berthed at Pier 3, which is equipped with 4160 volt power to accommodate the Nimitz class carriers, as well as with 480 volt power to service other classes of carriers. Total feet of berthing available at this pier is 2,500.

In addition to Pier 3, aircraft carriers can be berthed at Pier 2 at NAS Alameda, which does not have the same level of cold iron utilities and fire protection as Pier 3. The only other location within the Region where Nimitz class carriers could physically be berthed is at Hunters Point, but cold iron and any other type of shore support is presently virtually nonexistent. NAS Alameda provides a complete range of personnel support facilities, including recreation and exchanges, and good public transportation access to other parts of the Region.

The location of two nuclear aircraft carriers in the Region has raised the issue of the drydocking facilities required for their maintenance. This issue has provided the impetus for the reexamination of Hunters Point and what role, if any, it may play in its resolution. The general subject of aircraft carrier maintenance and the future of Hunters Point is discussed with the fleet berthing and maintenance functional systems.

Aircraft Maintenance

Two levels of aircraft maintenance are performed within the Region by the Naval shore establishment. Depot level maintenance is performed by the Naval Air Rework Facility (NARF) located at NAS Alameda and intermediate level maintenance is performed at both NAS Alameda and NAS Moffett Field by Aircraft Intermediate Maintenance Departments (AIMD) under the control of the stations' commanding officers.

²Id., at page 106.

Table AV-2: Comparison of 1997 Demand with Airspace Capacity

Alternative ¹	Overall System Demand ²	IFR Condition ³		VFR2 Conditions ⁴	
		Capacity ²	D/C ⁵	Capacity ²	D/C ⁵
I	192	83	2.3	163	1.2
3	192	117	1.6	231	0.8
X	192	154	1.3	308	0.6
Y	160*	160	1.0	320	0.5

Notes:

- Alternative 1 maintains the same relative distribution of passengers among the Bay Area airports that exists today.

Alternative 3 assumes air service is significantly improved and expanded at Oakland and San Jose Airports. Also, a portion of the regional demand is served at a North Bay airport.

Alternative X redistributes additional traffic from San Francisco to Oakland and San Jose to achieve a balance in the demand/capacity ratio at each airport.

Alternative Y redistributes additional traffic from San Francisco, Oakland and San Jose to a North Bay airport to assure that demand does not exceed IFR airspace capacity.

- Per hour during peak arrival period: 6-8 p.m.
- IFR Weather
Ceiling: Less than 100 feet
Visibility: Less than 3 miles
Frequency of Occurance: 8% of year
- VFR2 Weather
Ceiling: 1000 to 6000 feet
Visibility: 3 to 6 miles
Frequency of Occurance: 13% per year
- D/C = ratio of demand to capacity.

Source: Regional Airport Plan, April 1980, p. 106.

Depot level maintenance consists of rework maintenance performed on aircraft requiring major overhaul or a complete rebuilding of parts, assemblies, subassemblies, and end items, including the manufacture of parts, modifications, testing, and reclamation, as required. Operationally, NARF is divided into several departments which have control over specific functions. The internal management structure operates with military and civilian personnel, of which civilians are in the majority.

The physical accommodations for the NARF are spread throughout a large area of the Air Station. In some instances, the distance between buildings is 1.25 miles, which is excessive. The total number of buildings occupied fully or partially is seventy-two. The floor area of these assigned structures amount to 2.2 million square feet, or approximately 49 acres of covered area. When the parking and other outside areas occupied or assigned to the NARF are included, the total amount of land equals 138 acres.

Intermediate level aircraft maintenance consists of repairs and replacement of parts at the location where aircraft are based. The AIMD at NAS Alameda works only on parts of an aircraft; AIMD never sees a complete aircraft in its shops. The work is confined to the local tenant aircraft, with components occasionally inducted from a transient aircraft. Therefore, it works primarily on components for the following aircraft: A-7B, A-4F, TA-4J, CH-53D, SH-3D, and KA-3B.

Intermediate maintenance is conducted on P-3 aircraft by the Aircraft Intermediate Maintenance Department (AIMD) at NAS Moffett Field. The AIMD repairs, checks, and tests precision measuring equipment and other components of the P-3 aircraft system. In addition AIMD repairs at both Alameda and Moffett Field the ground support equipment which is used on the aircraft parking ramp.

Aviation and Aviation-Related Navy and Civilian Planning

Navy Planning. Navy planning for the aviation functional system as it exists within the Bay Region is bifurcated and responds to directives originating outside the Region. Operational planning is performed by Commander, Naval Air Force Pacific and Commander in Chief, U.S. Pacific Fleet. Facilities planning is conducted under the auspices of the Naval air station commanding officers with support provided by Western Division, Naval Facilities Engineering Command and with the cognizance of the operational commanders. Facilities planning primarily takes the form of station master plans, supplemented by Air Installation Compatible Use Zones (AICUZ) studies. The Department of Defense AICUZ Program was developed in 1973. The purpose of the AICUZ program is to identify lands outside the boundaries of an air Activity that are affected by aircraft operations, and recommend ways that the Activity and/or nearby community can grow without that growth becoming detrimental to the other. AICUZ issues normally concern noise impact in the vicinity of an airfield, safety concerns near the ends of runways, and airspace obstructions (towers, high buildings, etc.) near the runway approach and departure patterns. Other incompatible land and airspace uses are often considered under the AICUZ Program. For example, land fill sites which could attract birds beneath an approach path, and proposed airfields which could limit Navy use of the airspace have been addressed as AICUZ concerns in the past.

Land use compatibility plans in the vicinity of airports has become an established planning practice in the State of California. All commercial air carrier airports have completed land use compatibility plans. AICUZ studies for all 3 Navy airfields in the

region were completed in the late 1970's. All studies have been updated since that time -- NALF Crows Landing in 1980, NAS Alameda in 1981 and NAS Moffett Field in 1982. Additionally, each of the County Airport Land Use Commissions, except for Stanislaus County (NALF Crows Landing), has adopted a plan or set land use policies in the vicinity of the Navy airfields.

Civilian Planning. As an agency of the federal government, the Navy, including the aviation function, is generally exempt from civilian planning which directly addresses Navy real estate. However, civilian planning has several spill-over effects with indirect implications for Navy aviation operations within the Region. These plans which are developed at the Regional and local levels are examined below.

The Regional Airport Plan, jointly sponsored by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission, was completed in 1980. The advisory committee formed to oversee the preparation of the plan did not include any military representation.

The Plan is divided into two volumes -- Air Carrier Airports and General Aviation Airports. Neither volume makes any substantive references to the role of military aviation within the Region. The volume on Air Carrier Airports contains the following policy:

Priorities for use of airport and airspace by air carriers, general aviation and the military shall be established based on air safety, the need for access to a specific airport, and the potential for using alternate facilities.

Excluded from this policy is any mention of national defense needs as a factor in determining priority usage of airspace.

The volume on General Aviation Airports contains various policies proposing the joint use of NAS Moffett Field for training relief for San Jose and Palo Alto airports. This document is silent on NAS Alameda, but recommends acquisition of Moffett Field by Santa Clara County for general aviation "should Moffett Field be surplused."

The San Francisco Bay Area Seaport Plan was jointly prepared by the Metropolitan Transportation Commission (MTC) and the San Francisco Bay Conservation and Development Commission (BCDC) in 1982. The planning advisory committee which oversaw the preparation of the Plan did not contain Navy representation.

Substantive policies contained in the Seaport Plan concern Naval aviation only to the extent that they address NAS Alameda. Map 2 of the Plan designates Alameda as a port priority use area, with the notation "if and when not needed by Navy, should be developed for port and related industrial uses." This map also notes, however, "some fill may be needed for Navy operations."

The San Francisco Bay Plan was prepared by BCDC in 1969 and amended in 1979. Although the Bay Plan designates Naval Air Station Alameda for use as a port and related industrial uses "If and when not needed by the Navy," the Bay Plan clearly states that it does not advocate the closing of NAS or any military installation. The Bay Plan also contains policies stating that some fill may be needed for Navy operations, and that runway approach and takeoff areas should be kept clear of tall structures and incompatible uses.

Local planning affects the aviation function through two types of plans -- airport land use plans (ALUP's) and general plans.

Projected Changes

Navy aviation in the Bay Region is projected to change in both the short and long-term future. Over the long term, it is likely the aircraft carrier force of the Pacific Fleet will become exclusively or predominantly nuclear powered due to the long distances involved in transiting from the Eastern and Mid-Pacific to the Western Pacific and the Indian Ocean. In the short-term, a seventh carrier, which will be the third nuclear powered aircraft carrier, will be added to the Pacific Fleet. As of April, 1984, the West Coast homeport of this unit will be the City of Everett, Washington. Past events have demonstrated the lack of finality in the decision process, especially in the face of lobbying by the Congressional delegations of states with strong economic interests in their outcomes. Thus, although unlikely, it is not outside the realm of possibility to consider the homeporting of a third nuclear powered aircraft carrier in the Bay Region as the result of adding a seventh carrier, or in the very long term an eighth, nuclear carrier to the Pacific Fleet.

In the short-term it is projected that an additional active duty squadron will be added to the patrol force at NAS Moffett Field. Also in the short-term, a helicopter minesweeping squadron of seven to eleven aircraft and 400-plus personnel will be stationed at NAS Alameda.

Finally, the aircraft flown by reserve squadrons at Alameda are anticipated to be upgraded.

ANALYSIS OF OPERATIONAL ELEMENTS

Organization

As shown in Figure AV-1, the organization of Naval aviation within the Bay Region is fragmented and unification by chain of command occurs only outside the Region. An extreme example of this fragmentation is provided by Naval Air Station Alameda. Three major components of aviation -- carrier berthing, aircraft maintenance, and reserve training -- are located within the boundaries of the Air Station. Yet these three components have their own individual chains of command which do not reach a common authority until the CNO level. The effect of this disunification is that formal requests for functional coordination are not communicated at the Regional level, but instead must first travel up and then down the cognizant chains of command. This is a time-consuming process which tends to be circumvented by informal communications among commanding officers at the Regional level. When commanding officers have a preexisting personal relationship or are able to establish one, this pragmatic approach to coordination works well, but coordination will cease upon their transfer. If commanding officers are unable to communicate informally, coordination will take place through formal channels, or more likely given the time consuming nature of formal coordination, not at all.

Airfields

The landing and take-off facilities of NAS Alameda and Moffett Field are obviously essential to the continuation of Naval aviation in the Region. Each facility makes its own contribution and is subject to different constraints.

The Alameda facility is of unquestionable value given its access to a deep water port and piers capable of accommodating the Nimitz class attack carrier. Of secondary, but still high, importance is the geographic location of this facility within a densely populated, highly accessible Region. This location makes it extremely useful as a reserve training facility for these reasons, plus the urban Region provides a wide range of employment opportunities for reserve enlisted personnel who play a key role in the aircraft maintenance essential to reserve aviation.

Ironically, the very features which are responsible for Alameda's importance pose threats to its survival. The airfield's location within a densely populated urban Region makes it constantly subject to encroachment problems which are only partially resolved by the AICUZ program. If this facility were to be lost, this would spell the end of Alameda's usefulness for carrier berthing and reserve training and would significantly diminish the aviation function in the Region. But more importantly, the consequences of Alameda's loss would extend beyond the Region because it would leave the nation with only one Pacific Coast carrier port directly served by an airfield.

The airfield facilities at NAS Moffett Field share Alameda's vulnerability to encroachment because of its similar location in a developed urban area. Moffett Field is additionally subject to pressures from the civilian community for the shared or joint use of its runways for general aviation. While a March, 1984 report of the Department of Transportation and the Department of Defense has at least for the moment resolved the joint use issue in favor of the station's need for exclusive use, encroachment pressures will continue unabated.

As noted earlier in this analysis, the history of aviation in the Bay Region has proven that in military-civilian conflicts the former operates at a disadvantage. Ignoring for the sake of analysis the substantial Navy investment in Moffett Field, it would be possible to relocate this facility without severely compromising its mission. Unfortunately, the same does not apply to NAS Alameda. The unique combination of deepwater port and airfield which it provides simply cannot be duplicated at any other location of the Pacific Coast where it does not now exist.

Airspace

Congestion of Regional airspace already limits the ability of the aviation function to conduct its operation. As projected by the Regional Airport Plan, congestion will worsen and Regional airspace will reach its peak hour IFR capacity sometime before 1997. Present policy contained within the Airport Plan for establishing priorities for use of Regional airspace do not cite national defense as a criteria.

Short of a national emergency, Naval aviation cannot assert any priority claim of access to airspace capacity and to date the Navy has not participated in planning the future use of this Regional asset. Given the composition of the Region's economy, and its high dependence on air travel to support its tourism and information processing industries, as well as its relative affluence and ability to support a high degree of general aviation for recreational purposes, the Navy must actively

participate in planning the use of Regional airspace. However, participation alone will not guarantee the Navy the long-term access to Regional airspace it requires. Participation must be supplemented by a program designed to educate the public concerning the Navy's aviation mission in the Region, its importance to national defense, and its need for access to Regional airspace in order to effectively perform this mission.

Aircraft Maintenance

The various shops of the Naval Air Rework Facility (NARF) housing the main production lines and support shops are scattered throughout the stations which creates problems with work efficiency. In order for NARF to optimally function as an industrial complex, these support facilities must be relocated in closer proximity to each other. Because of the problems related to the availability of land, it has been difficult to site new structures to meet the long-term planning objectives of coordinated siting. Instead, buildings are sited on vacant lots because they are available, without considering the overall development of the base as it relates to the master plan. This method of "vacant lot" development can be disastrous over a long-term period. Ultimately, a situation can develop in which none or only very few of the production facilities of the NARF and other station functions are physically related to each other.

The 1980 Master Plan for NAS Alameda examined three alternatives to obtaining the additional space required for NARF expansion, as well as other station construction needs. These alternatives included using vacant portions of the waterfront operations area now reserved for parking and ship laydown areas, filling in the obsolete and unused seaplane lagoon, and using land within the Naval Supply Center Alameda Annex. Of these alternatives, only the second and third are physically feasible.

Filling in the seaplane lagoon would require some type of approval from the Bay Conservation and Development Commission (BCDC). The Master Plan concluded, based on unsuccessful past applications, that obtaining the necessary BCDC approval was unlikely. Recently, informal discussions with BCDC confirm this assessment, although the agency suggests the possibility of permitting the filling of the seaplane lagoon if this action were mitigated by the restoration to tidal action of diked, Navy controlled lands located elsewhere in the Region. If BCDC is genuinely interested in this approach and if the Navy were to pursue it, it would require a high degree of cooperation between the involved activities.

NSC Alameda Annex comprises approximately 81 acres of land. At present this site is occupied by the Fleet Hospital Support Office (hereinafter Office). When the Office commenced its use of this site in 1982, it was contemplated that this use would continue for only a five year period. By FY 1985, it was assumed NSC Oakland would have relinquished this site to NAS Alameda. The NAS Alameda Master Plan, submitted for CNO approval in 1981, contains a long term phasing program for NARF consolidation and expansion which is predicated on this assumption.

In May of 1983, the Office was directed to prepare for long term occupancy of the Alameda Annex. The implications of this extended use of the Annex for the NAS Alameda Master Plan prompted the Office to consider alternative West Coast locations for the storage of Fleet hospitals. One alternative receiving serious consideration is warehousing space under the control of NSC Stockton. This

alternative has been suggested by the OIC of the Office to the Fleet Hospital Project Manager and Commander, Naval Supply Systems Command.¹

In sum, space is at a premium at NAS Alameda and the resulting inability of the NARF to both expand and consolidate its operations will adversely affect its efficiency over the long term. Work needs to commence immediately on developing alternatives for increasing the real estate of NAS Alameda.

REGIONAL ISSUES AND OPTIONS

Issue 1: Regional command relationships within the aviation function are fragmented, frustrating efforts toward coordinated planning and the most efficient use of the function's resources.

Options:

- (a) Maintain status quo.
- (b) Obtain upper echelon concurrence to develop formal, Regional channels for coordination, including authority to compel resolution of issues at the local level.
- (c) Locally develop and institutionalize procedures for enhanced, informal Regional coordination.

Issue 2: The abilities of NAS Alameda and Moffett Field to conduct air operations will be increasingly threatened by off-station development within the noise and safety protection zones of their runways.

Options:

- (a) Maintain status quo.
- (b) Update AICUZ studies for both stations.
- (c) Option (b) plus develop comprehensive program, under Western Division leadership, to coordinate AICUZ studies with appropriate Airport Land Use Commissions with the ultimate objective of obtaining recognition of Navy AICUZ concerns in local Airport Land Use Plans.

Issue 3: Although the issue of joint use at NAS Moffett Field has been resolved for the present time, pressures for joint use will continue and are likely to increase with the increase of general aviation activity in the Region.

Options:

- (a) Maintain status quo.

¹ OIC, FLEHOSPSUPPOFF Ltr 0032G SER 291 of 19 September 1983.

- (b) Develop a strong, clearly defined Regional policy on joint use and include it in the Regional Plan.

Issue 4: Regional airspace is projected to reach IFR capacity during the peak period sometime before 1997, and the Regional Airport Plan does not provide priority of access based on the national defense.

Options:

- (a) Maintain status quo.
- (b) Participate in Regional airspace planning process.
- (c) Option (1) plus public education program as to the importance the Navy's aviation mission in the Region.

Issue 5: Naval Air Rework Facility (NARF), one of two depot level aviation maintenance activities on the Pacific Coast, requires additional space within the air station to both expand its operations and consolidate its dispersed activities.

Options:

- (a) Maintain status quo.
- (b) Explore with BCDC potential for filling in seaplane lagoon in exchange for mitigations elsewhere in the Region.
- (c) Continue investigation of relocation of Fleet Hospital Support Office from NSC Alameda Annex to NCS Stockton.
- (d) Options (b) and (c).

VI. COMMUNICATIONS

OVERVIEW

The communications functional systems analysis is limited to telecommunications which includes radio, cable, telegraph, and telephone. For most of these areas, the level of detail contained in this analysis is constrained by security considerations.

Objectives

The overall objective of this functional system is to provide a secure, efficient, survivable, and flexible system to enable Naval shore activities to communicate with each other and with operational units. It is virtually impossible to overstate the importance of this system to the overall mission of the Naval Shore Establishment within the Region.

General Characteristics

The communications system is a uniquely Regional system in both its function and in the physical location of its assets throughout the Region. Extending from its central facility located at the Naval Communications Station in Stockton are communications links to every other Naval activity within the Region. With the exception of supply, no other functional system can make this claim. The mission of the communications system also extends beyond the Bay Area to link it with other regions and units at sea.

Another distinguishing trait of this functional system is its constant condition of technological change. At this point in time, it may be truthfully said that communications are undergoing a technological revolution, both in the Bay Area and elsewhere.

REGIONAL CONTEXT

Relationships with Other Functions

The communications functional system is related to all other systems. Table COM-1 excludes telephones and shows remaining functional relationships between communications and other functional systems.

Relations with Civilian Community

The communications functional system shares with the civilian community access to that portion of the electromagnetic spectrum used for communications, access to communications land lines, and access to certain communications antennas and satellites. The civilian population of the Region provides this system with many of its technical and managerial personnel. A recent trend is for civilian contractors to assume responsibility for the operation and maintenance of small, discrete communications facilities, such as Naval Radio Receiving Facility, Skaggs Island, and Naval Radio Transmitting Facility, Dixon.

Table COM-1: Relationship of Communications to Other Functional Systems

<u>Functional System</u>	<u>Affected Activities</u>	<u>Type of Support Provided (P) or Received (R)</u>
Aviation	NAS Alameda, Moffett Field	P - Tactical communications with aircraft
Fleet Berthing	NAS Alameda, NAVSHIPYD Mare Island, NAVWPNSTA Concord, NSC Oakland	P - Fleet broadcasts and tactical communications with homeported ships
Ordnance	NAVWPNSTA Concord	P - Access to AUTODIN system
Supply	NSC Oakland	P - Access to AUTODIN system; R - Material support
Health Care	NAVHOSP Oakland	R - Health care for communications personnel
Housing	NCS Stockton	R - Housing for communications personnel

OPERATIONAL ELEMENTS

The operational elements of the communications functional system include:

- organization,
- Fleet broadcasts,
- tactical communications,
- Defense Communications System Trunking System Support,
- non-secure voice and data communications, and
- communications support.

Organization

The operational elements of the communications function within the Region are divided among three separate chains of command, as shown in Figure COM-1. From the perspective of the Region, the focal point of this system is Naval Communications Station Stockton, which is the organizational and operational headquarters of Naval telecommunications, and its five component Naval Telecommunications Centers (NTCCs). The locations of those organizational components within the Region are shown in Figure COM-2.

Fleet Broadcasts

An important method of communicating with afloat units is by recorded messages transmitted through regularly scheduled broadcasts. These units are required to monitor all broadcasts and copy message traffic directed to them. Message broadcasts for surface units located in the eastern Pacific Ocean are transmitted by Navy Communications Area Master Station (NAVCAMS) EASTPAC Honolulu and by Naval Communications Station (NCS) Stockton. Transmissions from NCS use either a ultra-high frequency (UHF) antenna located at Stockton and directed at Fleet Satellite (FLTSAT) 4 located in geostationary orbit above the Pacific Ocean, or a high frequency (HF) transmitting facility located at the Radio Transmitting Facility, Dixon. When using the HF mode, the broadcast signal at Dixon is keyed from NCS Stockton via a microwave system that links it with various remote communications facilities located in the Region.

This Regional, interconnecting microwave system is diagrammed in Figure COM-3. The primary communication function of this system is to connect NCS Stockton, Naval Air Station Alameda, and Naval Air Station Moffett Field with the transmitting and receiving facilities located at Dixon and Skaggs Island, respectively. Its secondary function is to permit communications between NAS Alameda and NAS Moffett Field and NCS Stockton. As presently configured, the microwave system is not used by NAS Moffett and NAS Alameda to communicate with each other.

Microwave communications requires an unobstructed, line-of-site radio path between the transmitter and receiver. Topography of the Region dictates the use of three microwave relay stations located on Mt. Diablo, Mt. Vaca, and Treasure Island as illustrated in Figure COM-3. The primary microwave path between Stockton and Dixon is via Mt. Diablo, with Mt. Vaca as the back-up relay station.

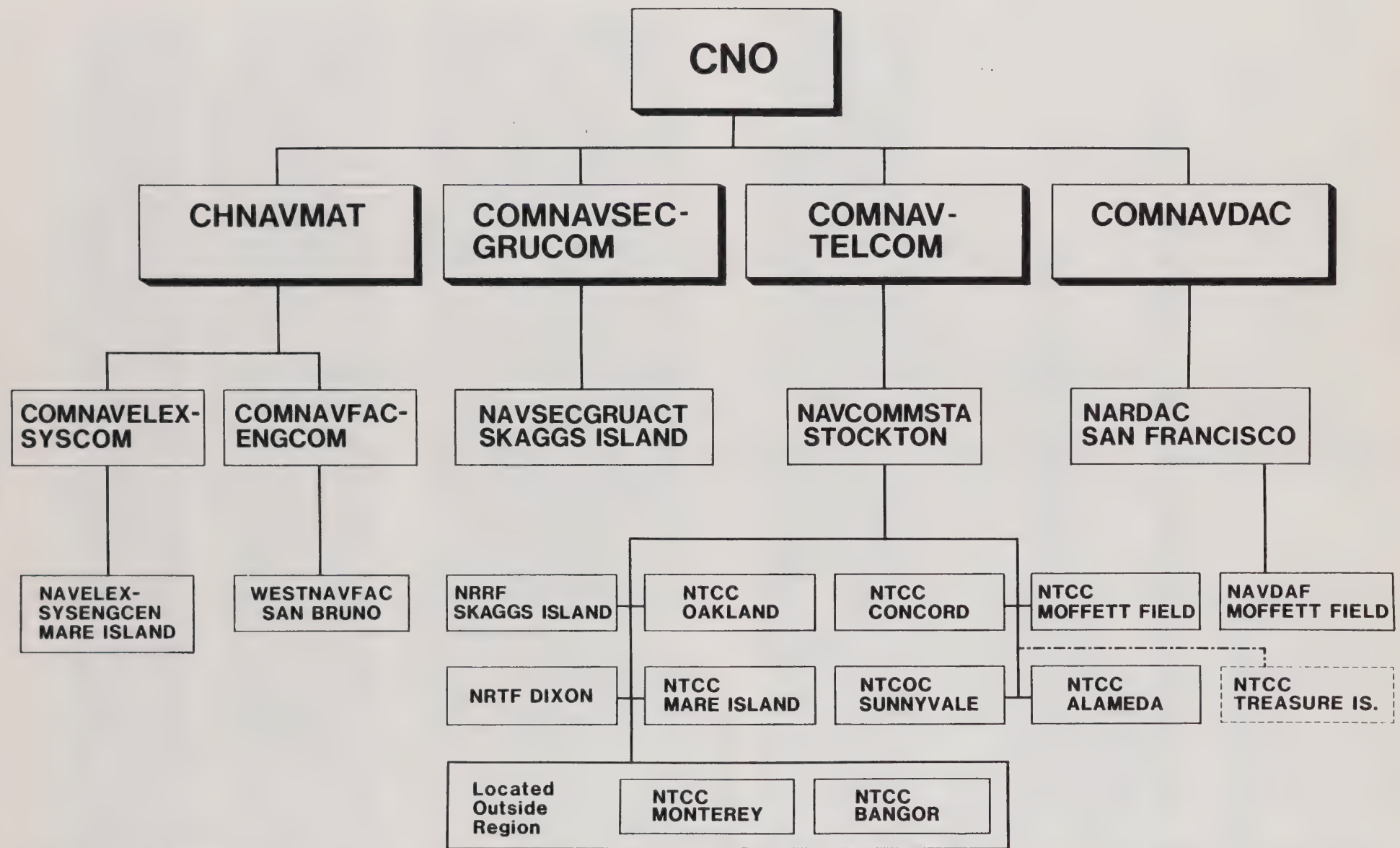


Figure COM-1
ORGANIZATION OF COMMUNICATIONS
FUNCTIONAL SYSTEM



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

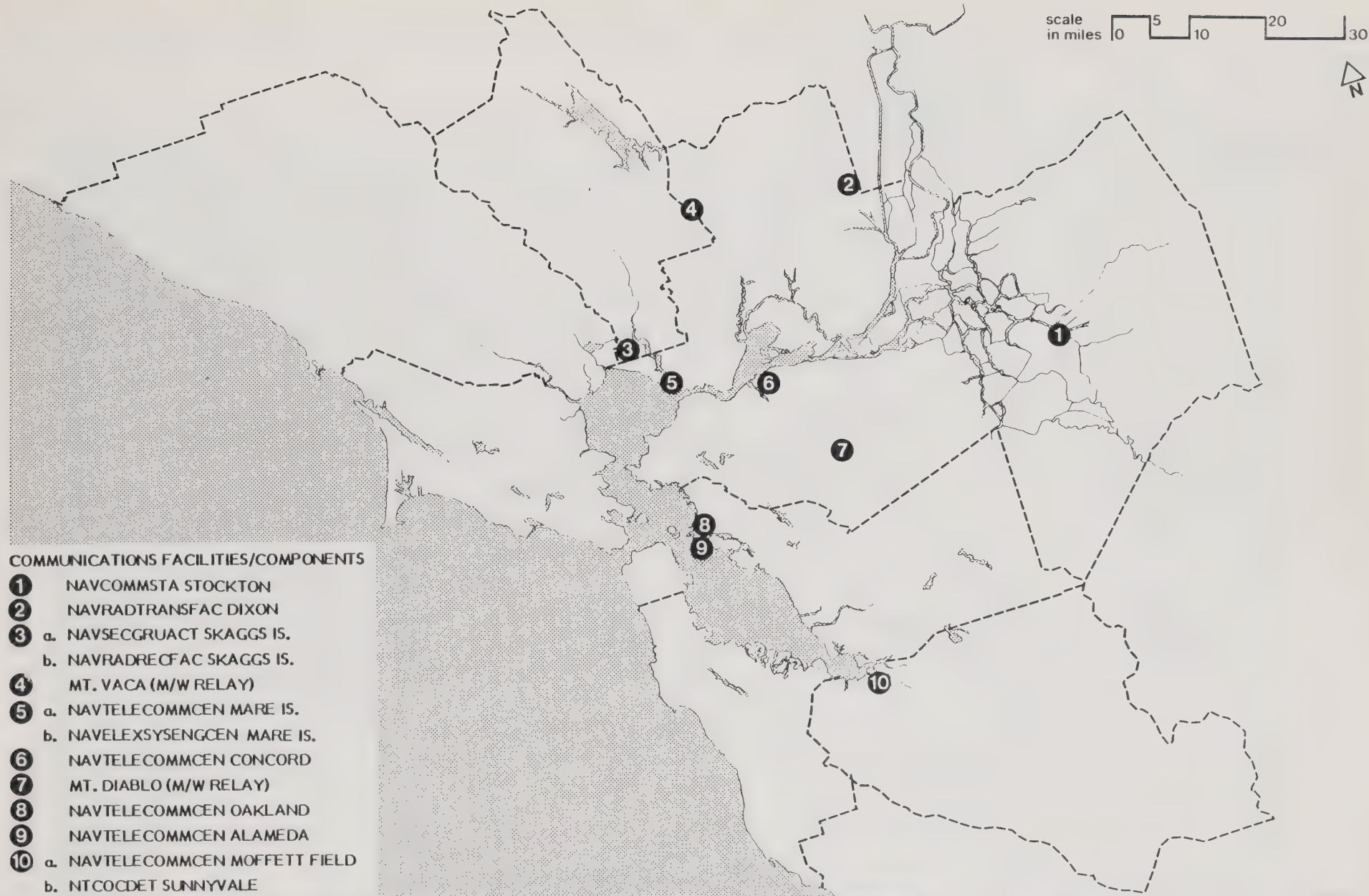


Figure COM-2
LOCATIONS OF COMMUNICATIONS
FACILITIES



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

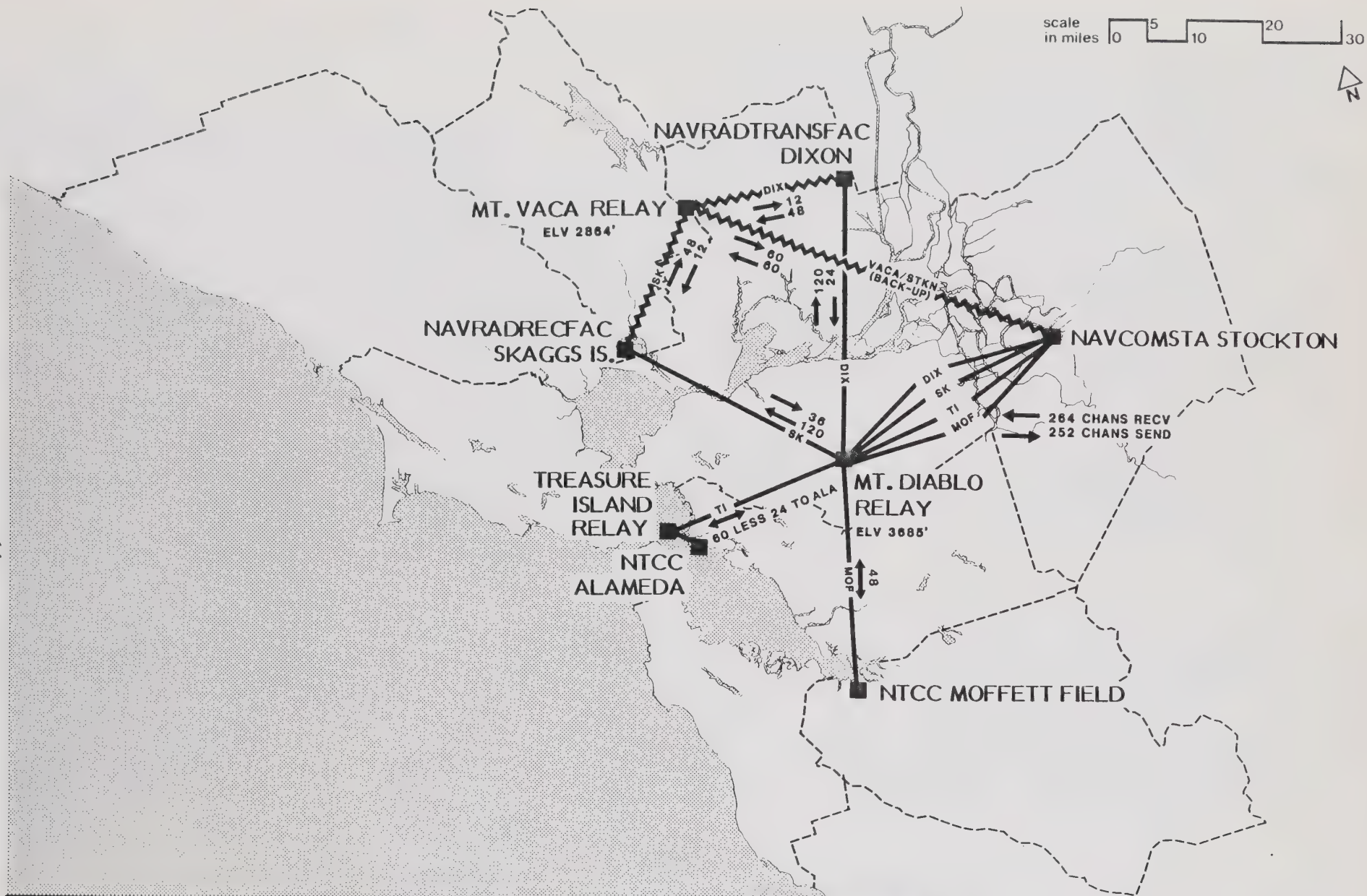
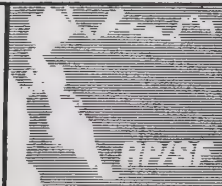


Figure COM-3
REGIONAL MICROWAVE SYSTEM



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

Use of the FLTSAT communication path or the HF path via the interconnecting microwave system is dependent on protection of unobstructed, line-of-site access between NCS Stockton and FLTSATs 1 and 4 and the relay stations located on Mts. Diablo and Vaca, respectively. The susceptibility of these paths to physical blockage and recommended height limitations for new construction required to protect them are discussed in detail in Land Use Compatibility Study, NCS Stockton, published in August 1983 by Western Division, Naval Facilities Engineering Command. Recommended height limits are presented in this report in tabular form and this table is reproduced in Table COM-2. It appears highly unlikely that any new development would exceed the recommended height limits for at least for the foreseeable future.

Message broadcasts for submarine units located in the Eastern Pacific Ocean are transmitted by NCS Stockton via the very low frequency (VLF) transmitter located at Naval Radio Transmitting Facility, Jim Creek, Washington.

Tactical Communications

Non-routine communications among shore activities and ship to shore communications between shore activities and afloat units which occur outside of the fleet broadcast system are commonly designated tactical communications. The need for this type of communication arises when a shore activity or afloat unit requires special circuits to send and receive message traffic. Usually the unit is required to acknowledge receipt of the transmission.

Ship to Shore. Tactical communications are transmitted to and received from afloat units in the Eastern Pacific by NCS Stockton, NAS Alameda and NAS Moffett Field via either satellite using ultrahigh-frequency (UHF) equipment located at Stockton or HF transmitters and receivers located at Dixon and Skaggs Island, respectively. HF communications to and from NCS Stockton via Dixon and Skaggs Island are accomplished using the microwave system described above. NAS Alameda and NAS Moffett Field also use this microwave system to access the HF transmitters and receivers located at Dixon and Skaggs Island, respectively.

The UHF satellite equipment located at Stockton is susceptible to degradation from electromagnetic interference (EMI) generated by natural and man-made sources. EMI degradation caused by man-made sources and recommended limitations on specific equipments known to be EMI sources were examined in Land Use Compatibility Study, NCS Stockton, published by Western Division, Naval Facilities Engineering Command in August, 1983. These recommended limitations, reproduced in Table COM-3, are in the form of prohibitions/restrictions on equipment within four concentric zones surrounding UHF communications equipment. Given the nature of these limitations and the diameters of the two outermost zones, future development in the general vicinity of Rough and Ready Island will most likely result in EMI problems.

Intra-Regional Shore to Shore. Tactical communications capabilities also exists within the Region to enable one activity to directly communicate with another.

DCS Trunking

The Defense Communications System (DCS) operates a worldwide communications system known as Automatic Digital Network (AUTODIN). Within the continental United States, AUTODIN operates six automatic switching centers (ASCs), two of which are located on the Pacific Coast at McClellan and Norton Air Force Bases. As

Table COM-2: Height Limitations for Buildings in Path of Satellite Links (Feet Above Sea Level)

Azimuth°	Distance from Communications Building in Feet							
	500	1000	1500	2000	2500	3000	3500	5000
100	48	92	136	179	223	267	310	442
110	139	273	407	541				
120	227	449	673					
130	293	582						
140	355	705						
150	410	814						
160	471	937						
170	541							
180	580							
190	541							
200	471	937						
210	410	814						
220	355	705						
230	293	582						
240	227	449	673					
250	139	273	407	541				
260	48	92	136	179	223	267	310	442

Source: Western Division Naval Facilities Engineering Command, Land Use Compatibility Study, NCS, Stockton, August, 1983.

Table COM-3: Allowable EMI Levels UHF (215-315 MHz)

<u>ZONE</u>		<u>LIMITS</u> (dBµV/m/MHz)
A	Within 328 feet of antenna	36
B	328 feet to 1036 feet	46
C	1036 feet to 3280 feet	56
D	3280 feet to 10365 feet	66

Source: Western Division Naval Facilities Engineering Command, Land Use Compatibility Study, NCS, Stockton, August, 1983.

shown in Figure COM-4, NCS Stockton provides Naval shore activities within the Region access to AUTODIN. Access is provided via Naval Telecommunications Centers (NTCCs) operated by NCS at various shore activities, as shown in Figure COM-4, and linked to the Navy Communications Processing and Routing System (NAVCOMPARS) equipment at Stockton by land line. NTCCs located at NSC Oakland, WPNSTA Concord, Naval Security Group Activity, Skaggs Island and Naval Post Graduate School Monterey are linked directly to ASCs. Other activities, including NAVSTA Treasure Island, NAVHOSP Oakland, Western Division Naval Facilities Engineering Command, Public Works Center San Francisco Bay, and SUPSHIP Hunters Point, must courier their classified message traffic to an NTCC located at another activity.

However, both Western Division and the Naval Hospital are linked by landline to NAVSTA Treasure Island and NAS Alameda, respectively, which in turn can relay communications to Stockton via the microwave system. Thus these two activities can transmit unclassified communications to NCS Stockton. After June, 1984, the Naval Hospital will lose this landline connection to NAS Alameda and become an over-the-counter user at NTCC Alameda.

NCS Stockton is the point of access to AUTODIN for afloat units at sea assigned to its communications jurisdiction. Afloat units transmit their AUTODIN traffic to NCS either by HF transmission to Skaggs Island, which in turn passes it by the microwave network to Stockton, or by UHF satellite transmission directly to NCS. These alternate communications paths are shown in Figure COM-4.

An important element of the DCS trunking is its survivability. The landline communications system within the continental United States comprises a grid-like network with lines running generally north-south and east-west. Communications facilities located at the corners of this grid or along its borders have comparatively less survival capability because their access to alternative land line paths is less than facilities which are centrally located and therefore have access to a greater portion of the grid. By virtue of its geographic location which places it inland and in a central location with respect to the northern and southern borders of the United States, NCS enjoys both a high degree of survivability and geographic proximity to a major Naval Seaport. Within the Region, survivability is provided by back-up land line circuits linking the NTCCs with NCS or with other NTCCs.

The system shown in Figure COM-4 is projected to change by the first quarter of 1985. NTCC Oakland will lose its direct access to ASC McClellan and will be linked to NCS. A NTCC will be reestablished at NAVSTA Treasure Island and it will be directly linked to ASC McClellan.

Non-Secure Voice and Data Communications

The above methods of communication are classified as "secure" because they have some means of protection against access by unauthorized persons. In addition to these secure communications methods, the communications functional system uses non-secure communications modes, principally Very High Frequency (VHF) radio communications and administrative telephones, for the transmission of unclassified information and the conduct of routine business.

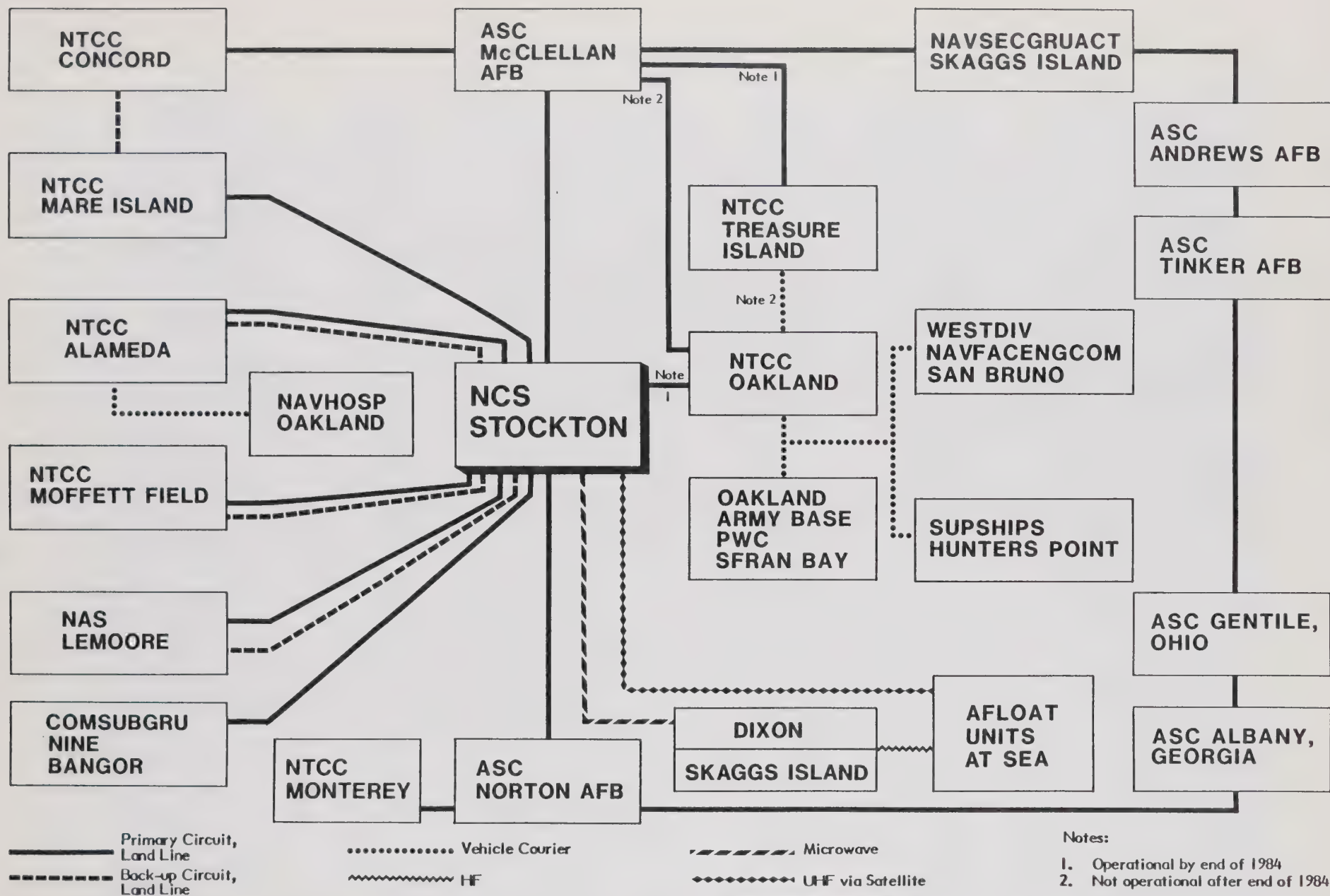


Figure COM-4
AUTODIN SYSTEM AND NCS STOCKTON



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VHF radio communications networks are used by various activities to provide command control and coordination of support functions such as fire, security, safety, and maintenance. All port operations and Coast Guard vessel traffic control are conducted on VHF frequencies.

All Naval shore activities, and afloat units in port, rely heavily on non-secure telephone communications and use equipment leased or purchased from civilian companies. As currently organized, the administrative telephone system in the Region is decentralized. Most activities have their own systems and directly control its equipment, management, billing, etc. At the activity level, there appears to be strong sentiment in support of decentralized control of the telephone system. The recent court-ordered divestiture by AT&T of its subsidiaries is likely to play a major role in future decisions whether to maintain the present, decentralized Regional telephone system or to establish some type of centralized system. Another factor which will influence the future of the telephone system is the rapidly increasing use of telephone cables for data, as well as voice, communications. These factors are discussed below under Analysis of Operational Elements.

Telephone communications in the Bay Region and elsewhere are currently under the jurisdiction of Naval Facilities Engineering Command. This will change in October, 1984, when this responsibility will be assumed by Commander, Naval Telecommunications Command.

Communications Support

The communications functional system receives support from three activities - Naval Electronic Systems Engineering Center, Mare Island, Naval Security Group Activity, Skaggs Island and Naval Regional Data Automation Facility, San Francisco.

Naval Electronic Systems Engineering Center (NAVELEX) provides direct support to the Fleet for the installation and technical assistance of satellite communications systems (SATCOM), OMEGA navigation systems, TACAN, LORAN, advanced aircraft identification systems, and development of the Marine Air Traffic Control Automatic Landing Systems (MATCALS). NAVELEX's responsibilities include both shore and seagoing electronic systems. Direct support and engineering assistance are rendered to all naval air stations, communication stations, training commands, Naval facilities, reserve training centers, and various other Naval installations located on the Pacific Coast. NAVELEX also supports all Navy and Marine Corps air navigational aids and ground-controlled approach equipment throughout the world.

Naval Security Group Activity is the host command for the Naval Radio Receiving Facility which manages, operates, and maintains high frequency, low frequency, and very low frequency radio receiving equipment and microwave systems in support of the communications missions of NCS Stockton. To date, this facility has been able to function virtually free from Electromagnetic Interference (EMI) due in large measure to the land use development policies of surrounding jurisdictions.

The Naval Regional Data Automation Center (NARDAC), San Francisco, located at NAS Alameda, provides Automatic Data Processing (ADP) services to Navy activities in the San Francisco Region including--the Naval Air Rework Facility, Alameda; the Naval Air Station, Alameda; the Naval Air Station, Moffett Field; the Naval Air Station, Lemoore; the Navy Support Activity, Treasure Island; the Naval Supply Center, Oakland; the Commander in Chief, Pacific Fleet; and other activities. NARDAC San Francisco is under the direction of the Commander, Naval Data

Automation Command (COMNAVDAC). In the performance of its mission, NARDAC San Francisco must manage remote facilities, as required; provide local data processing support in coordination with the regional center; design, develop, and maintain standard Navy automated data processing systems; and perform other work as directed by the COMNAVDAC.

ANALYSIS OF OPERATIONAL ELEMENTS

Encroachment on Rough and Ready Island

NCS Stockton, located on Rough and Ready Island in California's Central Valley, is subject to two types of land development pressures, commonly called "encroachment, which threaten its ability to perform its mission. One of these pressures, off-island land development which would present either EMI or line-of-sight physical obstruction problems, has been mentioned previously. A second category of pressure also originates from the civilian development community, but has as its objective on-island development capitalizing on its unique facility and transportation access features. These features include 6,000 feet of marginal wharf along the Stockton deepwater channel connecting the Port of Stockton with San Francisco Bay, immediate access to Interstate Highway 5 which runs from Seattle to San Diego, rail access, and 5.4 million square feet of permanent covered and 4.3 million square feet of open storage.

Development of a portion of Rough and Ready Island by the civilian community would potentially and directly generate both EMI and line-of-sight obstructions. Opening up a portion of the Island for civilian development would present the long-term potential for the actual physical displacement of the communications and other Department of Defense functions from the Island.

To meet the EMI and physical obstruction threats, Western Division Naval Facilities Engineering Command at San Bruno prepared and published in August 1983 the Land Use Compatibility Study for NCS Stockton. The implementation mechanism for the recommendations developed by this study pertaining to off-island development is a "Project Questionnaire" which is to be completed by the proponents of development within the Radio Influence Area of NCS, when they apply for the necessary permits from the City of Stockton, Port of Stockton, and San Joaquin County. Completed, questionnaires would be then forwarded to NCS Stockton. At present this implementation mechanism is operating only informally. To the best information of the NCS, completion of the Protection Questionnaire is not being required by local government. NCS has received informal requests directly from prospective developers for copies of the Land Use Compatibility Study, but has yet to receive any Project Questionnaires.

The strategy of NCS Stockton for meeting the threat for on-island civilian development is based on its value as a Department of Defense (DOD) logistics complex, not necessarily on its importance as a Naval Communications station. Accordingly, NCS Stockton proposed that Defense Logistics Agency assume responsibility as landlord of Rough and Ready Island in order to defend this facility based on logistics plans applicable to overall (DOD) needs, as opposed to the requirements of a Naval communications station. This proposal has been rejected.

Encroachment on Skaggs Island

EMI associated with land development also presents a potential threat to communications equipment located at Skaggs Island. Specific proposed projects within the EMI sensitivity zones around the Island include the Cullinan Ranch residential development, industrial development along the northernmost portion of Mare Island, and development associated with the Napa County Airport. The Master Plan for Skaggs Island recommends a strategy of on-going monitoring of surrounding zoning and development actions. This monitoring is currently being accomplished by activity personnel through review of public notices published in local newspapers. Direct on-going liaison with local government planning departments in the vicinity of Skaggs Island does not exist.

Administrative Telephones

Telephones are currently the most dynamic component of the communications functional system. A major driving force is the court-ordered divestiture of AT&T of its regional subsidiaries.¹ As a result of divestiture and as documented in a recently completed study,¹ there have been significant changes in previously established procedures for obtaining and maintaining telephone services at most of the Region's Naval activities.² Under divestiture, ownership and maintenance of the telephone systems at these activities has been divided as described below and diagrammed in Figure COM-5.

- Central Office telephone switching equipment located off premises is owned and maintained by PAC-BELL.
- Incoming circuits from the local telephone central office are owned and maintained by PAC-BELL.
- Telephone switching equipment located at each activity is owned by AT&T Information Systems.
- Cables and support structures between the central switch and the "drop" to each building are owned partially by the Government and partially by PAC-BELL.
- Telephone system wiring within the buildings at each activity is owned or will be owned by the activity.
- Telephone station equipment at each activity is owned by AT&T Information Systems.

¹Submission No. 4, Final Report, Engineering Services for DMATS-SF, submitted to WESTNAVFACENGCOM by Westin Control Consultants, May 16, 1984.

²These activities are WPNSTA Concord, SUPSHIP Hunters Point, NAS Moffett Field, Navy Fuel Depot, Point Molate, NAVHOSP Oakland, NSC Oakland, NAVSTA Treasure Island, and Oakland Army Base. The following activities were not included in the study cited in footnote 1 - NCS Stockton, DODHF Novato, NALF Crow's Landing, and NAVRADTRANSFAC Dixon.

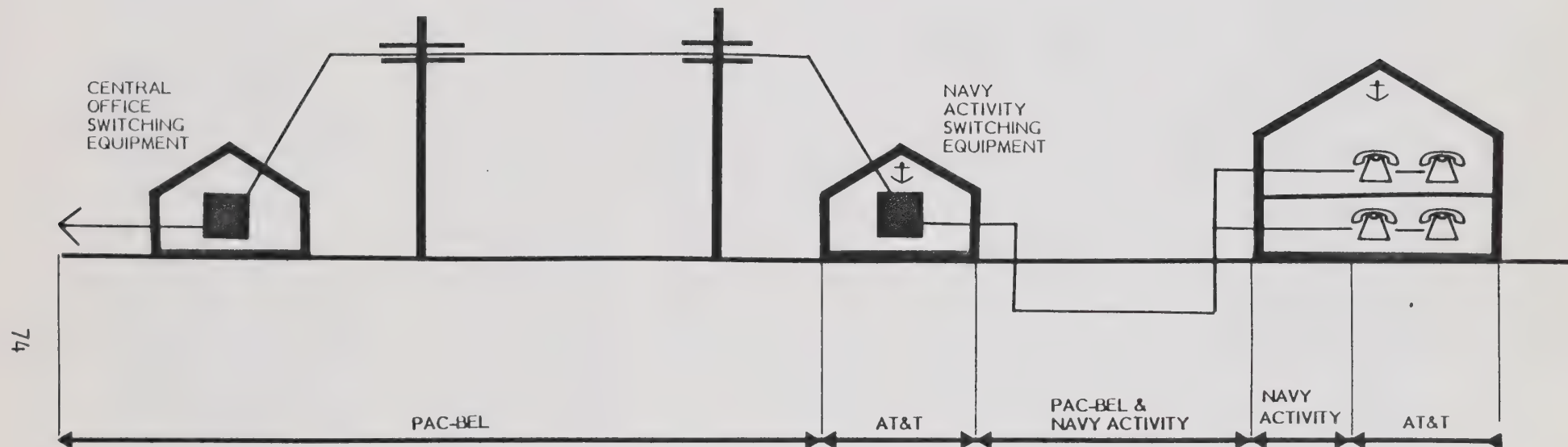


Figure COM-5
POST-DIVESTITURE OWNERSHIP OF
TELEPHONE EQUIPMENT AT NAVY
ACTIVITIES



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The implications of divestiture are still being analyzed, but some preliminary conclusions can be drawn. One, although the cost of long-distance calling will decrease, the cost of local calls within the Region is expected to increase 200 to 300 percent over the next 5 years.

Two, Pacific Bell, which owns an estimated 80 percent of the telephone cable located on the Region's Naval activities, will no longer install new cable unless prepaid by the Navy. Previously, Pacific Telephone installed new cable for "free", and amortized this investment through service charges collected from the user. Because telephone cable at Naval activities under the jurisdiction of the Public Works Center is not owned by PWC, it cannot install new cable under its special projects process. Long lead times associated with the MILCON process reduce its usefulness for funding new cable installation. The remaining alternative is to fund installation out of activity operating budgets. As discussed below, these cost can be substantial given the magnitude of the anticipated need for telephone cable upgrades.

Three, future maintenance responsibilities for the telephone cable located at Naval facilities are uncertain and continued maintenance by Pacific Bell for the indefinite future cannot be assumed.

Automation and computerization of Shore Establishment offices within the Region will also exert a profound impact on the telephone systems at individual activities. Presently these systems principally function, as shown in Table COM-4, as voice communications circuits and this function is reflected in their analog design. Transmission of data via these existing systems requires the use of a modem at each end of the circuit in order to convert the analog signal into the digital signal required for data transmission. The existing twisted wire cable used almost exclusively in telephone systems presents limitations for digital signal transmission given its age, design, and composition. Other equipment deficiencies inherent in the existing telephone systems at Regional Naval activities are detailed in a recently completed study.¹

As shown in Table COM-4, it is projected that in the near term, data transmissions will account for 50% of the use of entrance and local distribution cable at Naval activities. Massive conversion of the existing telephone systems equipment and cable networks from analog to fully integrated, digital systems will be necessary to support this transition and allow these activities to capitalize on future advances in communications technology.

Closely associated with the conversion in system equipment will be the need for a quantum jump in the level of expertise of telephone communications managers at Naval activities. These individuals must be able to accurately assess the communications needs of their activities and their various tenants, and design a responsive communications system. To implement these designs, activity communications design must be fully integrated into the activity master planning process which now virtually ignores this area.

¹Submission No. 4, Engineering Services for DMATS-SF, O. C., pp. 3-1 to 3-5.

Table COM-4: Existing and Projected Usage of Telephone Cable¹ at a Typical Naval Activity

<u>Type of Use</u>	<u>Existing</u>	<u>Projected</u>
Voice	55%	35%
Data	30	50
Special Circuits	10	10
Autodin	5	5

Notes: 1. Entrance and Local Distribution Cable.

Source: J. Cipres, Communications Manager, Western Division.

The Region's Naval telephone system is decentrally organized, which has implications for how successfully it will be able to respond to divestiture and the transition from a voice/analog system to a fully integrated (voice and data) digital system. In order to meet these challenges, Western Division Naval Facilities Engineering Command is currently evaluating a Consolidated Area Telephone System (CATS) for the Region. A study sponsored by Western Division has recently been completed and has concluded that a CATS would be feasible and cost effective. The CATS network would replace the telephone systems at most Regional Naval activities with fully integrated, digital switching systems for voice and data. Excluded from the CATS network as presently proposed are NCS Stockton, DODHF Novato, NALF Crows's Landing, and NAVRADTRANSFAC Dixon, but these activities would be able to interface with the network.

CATS is expected to be operational by the Summer of 1987. Major benefits anticipated from this system include:

- cost reduction for localized calling;
- centralized management and accounting;
- 24 hour operation; and
- attendant operation for Pacific Gateway access.

The three year lead time projected for CATS raises the issue of how the immediate needs of the Region's Naval activities for maintenance, repair, and renewal of the existing telephone systems will be addressed in the interim. This issue is recognized by Western Division communications planners, but remains unresolved.

REGIONAL ISSUES/OPTIONS

Issue 1: Communications facilities at NCS Stockton and NAVSECGRUACT Skaggs Island are threatened by encroachment in the form of EMI, physical obstruction of line-of-sight communications, and additionally in the case

of Stockton, physical displacement, yet the strategies for dealing with these threats are largely reactive.

Options:

- (a) Maintain status quo.
- (b) Develop strategies designed to achieve community recognition of the importance of these communications facilities to national defense and the need to reflect sensitivity zones in local general plans and land use regulations.
- (c) Option (b) plus aggressively work for actual inclusion of communications encroachment concerns in local land use regulations.

Issue 2: Due to the divestiture of AT&T, the Navy's "telephone bill" is expected to sharply increase in the near term future due to a 200 to 300 percent increase in charges for local calls, the imposition of pre-paid, up-front charges for installing new cable, and the potential shift in cable maintenance costs from PAC-BELL to the Navy.

Options:

- (a) Maintain status quo.
- (b) Support installation of a Consolidated Area Telephone System within the Bay Region.
- (c) Investigate other alternatives for achieving telephone communications cost reductions which address short term needs for telephone system maintenance, repair, and renewal.

Issue 3: To maintain its efficiency and keep pace with technological change, the Naval administrative telephone system within the Region must make the transition from an primary voice, analogue-based system to a fully integrated, digital-based system. Yet, there exist substantial barriers to this transition, including cost, lack of personnel expertise, and inadequate planning.

Options:

- (a) Maintain status quo.
- (b) Develop policies and programs at both the Regional and activity level for funding, training, and planning in support of the transition to a fully integrated digital-based administrative telephone system.

VII. ORDNANCE

OVERVIEW

The ordnance functional system comprises functional elements of the Shore Establishment which are involved in the receipt storage, delivery, handling, production or use of ordnance. Excluded from this system is ordnance training, which is addressed under the training functional system.

Objectives

The ordnance functional system has two major objectives, which are:

- Support for afloat units under the operational command of Commander in Chief, U.S. Pacific Fleet; and
- Transshipment of ordnance, in which the Department of Defense locally utilizes the Navy's Weapon Station at Concord as a Department of Defense Ammunition Throughput Terminal.

Closely related to these two operational objectives is that of safety in all aspects of ordnance handling.

REGIONAL CONTEXT

Relationships with Other Functions

Table OR-I shows the relationship of ordnance to other functional systems.

Relationships with Civilian Community

Like most other functions, ordnance relies on the civilian community for a major part of its workforce. Public highways, railroads, and waterways are used for the transportation of ordnance. The Navy works with local, county and state governments to work out the least hazardous methods to transport ordnance and pyrotechnics within the existing transportation systems.

The Coast Guard Port Safety Station Concord, under the Captain-of-the-Port San Francisco, supervises the handling of ordnance and other dangerous cargo aboard commercial vessels. The Coast Guard is also responsible for the supervision and training of personnel, including the Navy and Reservists, in dangerous cargo handling.

To protect life and property from ordnance handling accidents, the Navy establishes Explosive Safety Quantity Distance (ESQD) arcs in the vicinities of individual handling and storage sites. In the vicinity of Naval Weapons Station Concord, public highways and utility lines pass within the boundaries of ESQD arcs established around station facilities.

Table OR-I: Relationship of Ordnance to Other Functional Systems

<u>Functional System</u>	<u>Affected Activities</u>	<u>Type of Support Provided (P) or Received (R)</u>
Aviation	NAS Alameda, NAS Moffett Field	P - Ordnance support for aviation missions.
Fleet Berthing	NAVSHIPYD, Mare Island	R - Berthing for AE's homeported at NAVWPN-STA, Concord
POL	Naval Fuel Depot Point Molate	R - Fuel for AE's
Supply	NSC Oakland	R - Material support
Facilities Maintenance	NAVWPNSTA, Concord	R - Facilities maintenance
Housing	NAVWPNSTA, Concord	R - Housing for ordnance system personnel
Health Care	NAVHOSP, Oakland	R - Medical care for ordnance system personnel

Naval Weapons Station Concord is also engaged in discussions, via the Real Estate Division of Western Division Naval Facilities Engineering Command, with the Bay Area Rapid Transit District regarding the possible use of 15 acres of station land in the short-term for a park and ride site and, ultimately, for a BART extension station.

OPERATIONAL ELEMENTS

The ordnance functional system comprises the following operational elements:

- organization,
- primary receipt, segregation, storage, and issue (RSS&I),
- ordnance transfer,
- secondary RSS&I,
- transshipment,
- engineering, quality control, research and development, and
- safety and disposal.

Organization

The major portion of the ordnance functional system in the Region is under the control of the Naval Weapons Station Concord. The chain of command for this activity passes upward through Commander Naval Sea Systems Command and Chief of Naval Material before reaching the Chief of Naval Operations. Other elements of the ordnance system come under the organizational control of commanding officers at individual activities. Those activities listed below have weapons or other departments with major ordnance responsibilities assigned to them:

- Naval Air Station Alameda, and
- Naval Air Station Moffett Field.

Primary Receipt, Segregation, Storage and Issue (RSS&I)

Fleet support ordnance operations in the Bay Area are centralized at the Naval Weapons Station, Concord, as shown in Figure OR-1. Here, ordnance is received, segregated, stored and issued (RSS&I) to ships and military Activities in the region. Excluding Fleet returns and roll-back ordnance, approximately 60% by weight of the ordnance received by Concord is received by truck and the remainder is received by rail. NAVWPNSTA Concord has three operational ordnance handling piers and 214 magazines which have a present storage capacity of 94,000 short tons of ordnance.

It is the responsibility of NAVSEASYSCOM to develop storage requirements for all Naval activities. These individual requirements are based on the allocation of the War Reserve Material Requirements (WRMR), as determined by the Chief of Naval Operations. The CNO determines these amounts based on the projected distribution of forces in the Atlantic, Pacific and European theaters. After the individual Fleet commanders-in-chief determine the pre-positioning requirements for their portion of the WRMR, NAVSEA formulates the Approved Basic Stock Levels of Ammunition (ABSLA) for each activity. Negotiations are held with the stations to ensure that explosives safety criteria and the storage capacity of the activity are considered.

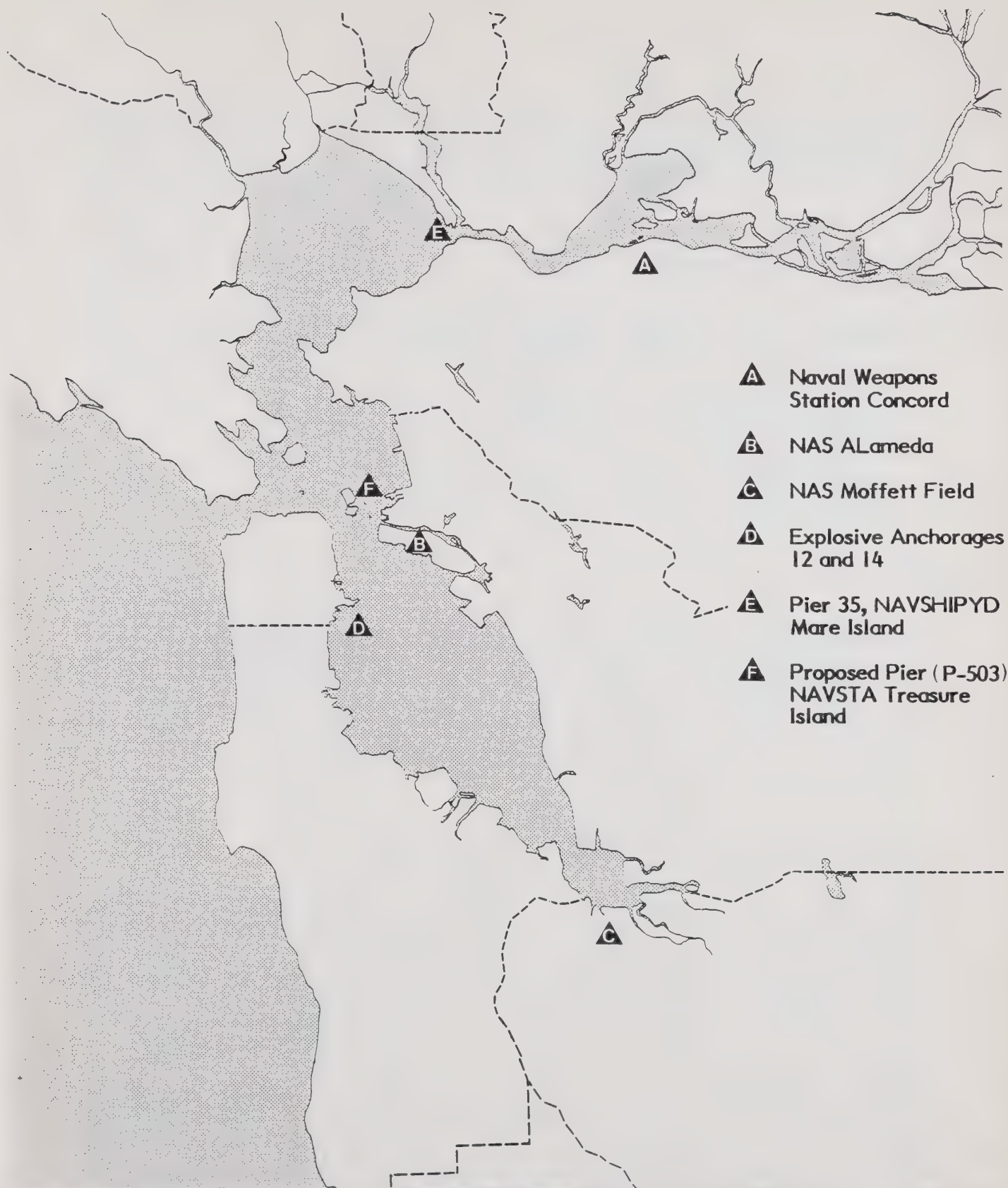


Figure OR-1
**LOCATIONS OF
 ORDNANCE OPERATION-
 AL ELEMENTS**



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The ABSLA is intended to include all ammunition which is to be stored at an activity with the exception of fleet return and material for foreign sites. The ammunition is divided into several major categories. These include operating stocks to meet out-load requirements for ships completing yard overhaul, for ships homeported in the region, and other operational readiness requirements. Operating stocks also include training ammunition for ships homeported in the vicinity of the activity.

For the Concord Weapons Station, these operating stocks include:

- 4 AE shipfills
- 4 AE cargo loads
- 2 CV shipfills
- 2 CV mission loads

In addition to operating stocks, special reserved amounts are stored for specific mobilization programs.

Outloading and Offloading Ordnance

Ordnance is outloaded and offloaded from Fleet units by a variety of methods, including underway at sea, pierside, and explosive anchorage. Shore activities receive ordnance primarily by truck.

Underway at Sea. The preferred method of outloading and offloading Fleet units, including both transient units and units homeported in the Region, is underway at sea. Currently, seven ammunition ships (AE's) are homeported at Concord and this is one, but only one, of their missions.

Pierside. Certain piers within the Region conform to the ESQD criteria established by Naval Sea Systems Command in the OP-5 Manual. Only these piers may be used for ordnance transfer activities, and then only within limitations relating to the category of the ordnance and its net explosive weight (NEW). Depending on their drafts and masthead heights, ships may outload or offload ordnance at pierside at one of the three piers at the Naval Weapons Station or at Piers 2 and 3 at NAS Alameda. Table OR-2 shows which classes of ships are physically able to be accommodated at these facilities. A potential ordnance handling pier is located at the south end of Mare Island. Pier 35 has not been in use lately and has silted to a point where dredging and structural repairs to the facility are required to regain its use. Use of this pier would allow ordnance transfer to ships unable to pass under the Benicia-Martinez Highway Bridge (135 feet vertical clearance) enroute to Concord, thus avoiding the need to barge ordnance the long distance trip from Concord to NAS Alameda. Table OR-2 assumes a dredged pierside depth of 40 feet for Pier 35 and shows which classes of ships could be accommodated at this pier.

A second potential ordnance handling pier is the new pier programed for construction at Treasure Island under MILCON P-503. This pier is also included in Table OR-2.

When ordnance transfer is conducted at one of the Concord piers, ordnance is brought to the pier from inland magazines by rail or truck and then loaded aboard ship. Large outloads are scheduled well in advance and are begun one or two weeks prior to ship arrival. Material is loaded aboard rail cars and held in barricaded slidings until the ship arrives. Offloading operations reverse this process. For large offloads, rail is more efficient than truck.

Table OR-2: Ordnance Handling Piers by Ship Class

Type Class	Standard Classification	Existing		Potential	
		NWS Concord	NAS Alameda	Pier 35 Mare Island	NAVSTA Treasure Island
Attack Carrier	CV	N-1	Y	N-1	N-2
Attack Carrier Nuclear	CVN	N-1	Y	N-1	N-2
Combat Store Ship	AFS	Y	Y	P	P
Fast Combat Support Ship	AOE	N-3	Y	P	P
Replenishment Oiler	AOR	N-3	Y	P	P
Oiler	AO	N-3	Y	P	P
Tender	AD	Y	Y	P	P
Repair Ship	AR	Y	Y	P	P
Ammunition Ship	AE	Y	Y	P	P
New Cruiser and Destroyer Types	CG/DD 963	N-3	Y	P	P
Frigate Types	FF/FFG-7	Y	Y	P	P
Amphib Cargo Ship	LKA	Y	Y	P	P
Mine-Sweeper Ocean	MSO	Y	Y	P	P
Military Sealift Command Pacific	Various	N-3	Y	P	P
Coast Guard Cutter	WHEC	Y	Y	P	P

Source: SCA

Legend:

Y - Yes

P - Potential Berth

N - No, see limiting factors

1. Limiting factors; clearance under Richmond-San Rafael Bridge (185 feet) and channel depth.
2. Limiting factor is channel depth.
3. Limiting factor is 32 feet depth at pierside.

Ordnance transfer to ships at NAS ALameda is usually accomplished from ordnance barges dispatched from Concord and moored alongside the receiving or off-loading ship. The Naval Weapons Station operates a fleet of 30 barges, of which only 16 are in use at one time, and two tugboats. Additional tugboats are also available on an as needed basis from Mare Island and Treasure Island. For safety reasons, ordnance barges are permitted to be underway in the Bay during daylight hours only and they cannot "layover" at the Alameda piers. These factors, combined with the long trip back to Concord and occasionally rough weather conditions on the Bay, argue in favor of reactivating the ordnance handling pier at Mare Island to provide ordnance barges with a layover point closer than Concord.

Explosive Anchorage. When a particular ordnance transfer operation involves categories and quantities of materials exceeding ESQD criteria, it is conducted at one of two explosive anchorages, 12 or 14, located in the San Francisco Bay in the general vicinity of Hunters Point. Ordnance barges make the trip from Concord to carrying ordnance for outload or offload as required. For reasons noted above, the existence of a reactivated ordnance handling pier at the south end of Mare Island would assist barges engaged in operations at explosive anchorages by providing them with a layover point.

Truck. Shore activities primarily receive, pick-up, or return ordnance to Concord by truck. This method of transfer brings ordnance in close proximity to the civilian community and is closely coordinated with cognizant local and state officials.

Secondary RSS&I

Naval Air Stations Alameda and Moffett Field receive ordnance from Concord, as well as other sources, and perform secondary RSS&I functions in support of the tenants located at their activities.

Transshipment

The Naval Weapons Station Concord is the major west coast transshipment and fleet support point for ammunition of all services. The transshipment function is administered by the Army, and NAVWPNSTA Concord is used for ship loading only, not storage. All ordnance transshipments are administered by the Joint Conventional Ammunition Program Panel (JCAP), which includes representatives of all armed services: the Navy is represented by the Chief of Naval Material; the Army serves as the JACP's single service manager for production and transportation of munitions.

Ordnance Engineering, Quality Control, Research and Development

Naval weapons engineering, quality control evaluation, research and development are performed at various Naval Activities in the region. At the Weapons Station Concord, the Weapons Quality Engineering Center provides testing and evaluation of modern weaponry. In addition to Concord, ordnance research and development functions that receive direct or indirect ordnance support include: The Navy Surface Test Launch Facility Sunnyvale, the Navy's Shock Test Facility Hunters Point, Lawrence Livermore Laboratory and various Command defense contractors located in the San Francisco Bay Area.

Safety and Disposal

The Navy sets stringent performance criteria for safety in ordnance handling and storage. Explosive Safety Quantity Distance (ESQD) clearance arcs are assigned for each handling and storage site. The radii of the arcs is related to the quantity and type of ordnance. Occupied buildings, whether occupied by military or civilian persons, are incompatible uses within the arc.

Figure OR-2 illustrates the uninhabited arcs which would be required for the designed maximum utilization of the magazines located in the inland area of the Weapons Station. The shaded areas lie outside of the station's boundary and the cross-hatched areas represent areas which the Station does not own, but over which it exercises easement rights prohibiting habitation.

Post World War II urbanization of the lands surrounding the Weapons Station have forced a reduction in the utilization of its magazines to levels substantially below design capabilities in order to retract the ESQD arcs to within the boundary of Navy owned or controlled land. Even these reduced arcs still encompass a portion of State Highway 4 which traverses a corner of the inland area. In the tidal area of the station, two public roads -- Waterfront Road and Port Chicago Highway -- lie within ESQD's. Proceedings are currently underway to close these roads at the points where they enter station property.

Concord is also the home of the Navy's Explosive Ordnance Disposal Mobile Unit, Pacific Detachment. This Unit provides explosive ordnance disposal standby services within the Region. In addition to military disposal, the Unit is available to assist local government and act as an explosive consultant.

ANALYSIS OF OPERATIONAL ELEMENTS

Reactivation of Pier 35 at Mare Island

Ordnance handling operations in the San Francisco Bay Region lack flexibility because of limited facilities. As shown in Table OR-2, there are only two ordnance handling piers in the Region and only the pier at NAS Alameda is fully accessible. Access to the piers at Naval Weapons Station Concord is limited by bridge clearances, depth alongside the ordnance handling piers, and for some classes of ships, channel depth. Although the operational flexibility of this functional system will be greatly improved by the construction of the new pier at Naval Station Treasure Island (MILCON P-503), reactivation of Pier 35 at Naval Shipyard Mare Island would greatly enhance operational flexibility in two areas. One, ships currently unable to reach Concord could berth at Pier 35 while conducting ordnance handling operations, thus requiring only very short trips by ordnance barges between this pier and Concord. Two, Pier 35 would provide a convenient layover point for ordnance barges conducting operations at NAS Alameda or Explosive Anchorages 12 and 14 and forced to secure operations due to weather conditions or sunset.

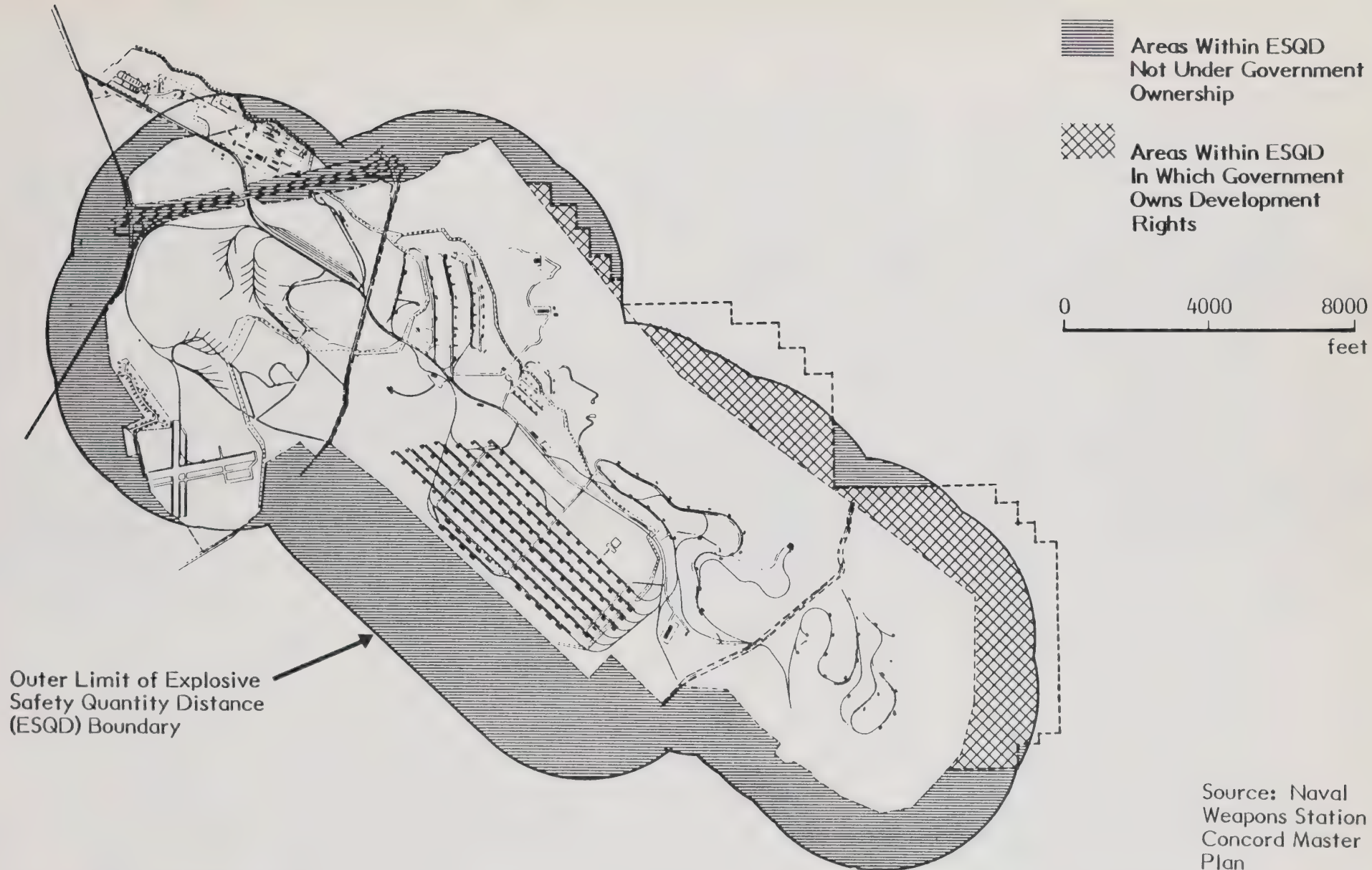


Figure OR-2
ESQD BOUNDARY



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

Proposed BART Park and Ride Lot at Naval Weapons Station Concord

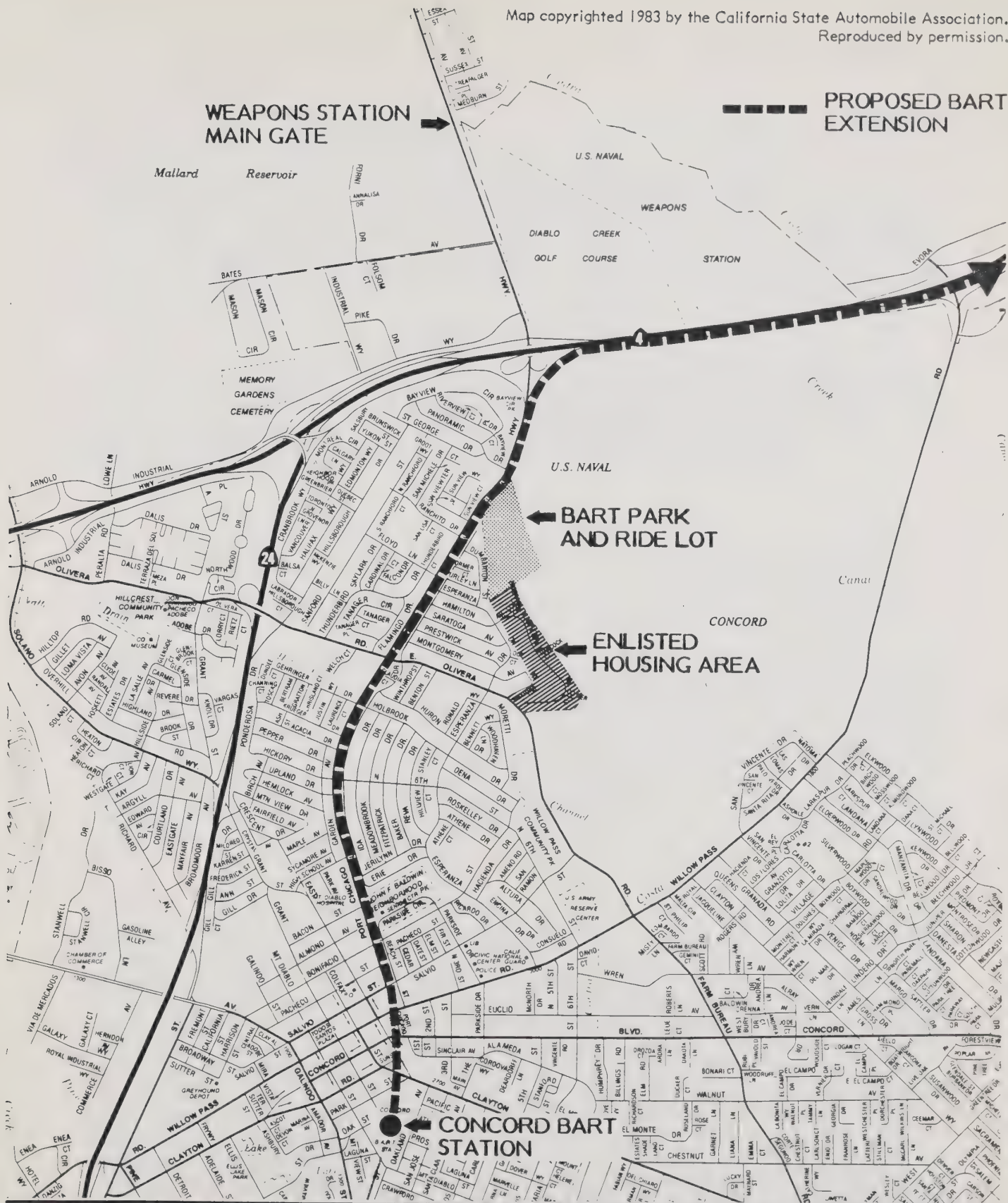
The Bay Area Rapid Transit District (BART) is proposing to construct a "park and ride" lot on approximately 30 acres of land leased from the U.S. Department of the Navy at Naval Weapons Station Concord. As shown on Figure OR-3, this proposed facility would be accessible from State Route 4 via the Port Chicago Highway Interchange. The lot is designed to serve BART patrons from the Pittsburg-Antioch area who would be able to drive to this facility, park in one of 538 spaces, and board a shuttle bus to the existing Concord BART station in downtown Concord, rather than attempting to find space in this station's overcrowded parking lot. Bus service would be provided between the park and ride lot and the main gate of the Weapons Station every ten minutes during the peak period on weekdays. There is some confusion regarding the location of the park and ride lot relative to the ESQD boundary of the Weapons Station. Information provided by the station shows all of this facility outside of the inhabited building ESQD arc, while information prepared by BART shows a portion of this facility (but none of the 538 parking spaces) within the arc.

Directly adjacent to the south of the proposed park and ride lot is the enlisted family housing area for the Weapons Station, containing 84 units. Under the current preliminary design, direct pedestrian access from this housing area to the lot would be blocked by a fence surrounding the lot.

Long range planning by BART and the Metropolitan Transportation Commission provides for the construction of a North Concord station on the site of the park and ride lot and the extension of the Concord BART line north from the existing station along the abandoned Sacramento Northern Railroad right-of-way paralleling Port Chicago Highway to State Route 4, then eastward along Route 4 to West Pittsburg, Pittsburg, and Antioch. The general route of this line extension, which is shown in Figure OR-3, would bring it within the inhabited building ESQD arcs which currently overlap approximately one mile of State Route 4, the median of which would be used for the BART extension.

From the perspective of land use compatibility, construction of a BART park and ride lot on Weapons Station property cannot be viewed in isolation, but must be placed in the context of long-range plans to construct a BART station on this site and to extend the BART line from this new station to the east along State Route 4. On one hand, the location of a BART station on Weapons Station land would significantly improve the Regional transit access of Station personnel who are transit-dependent, including junior Navy and Marine Corps enlisted persons and spouses and children of military personnel living in Station housing. Increased transit accessibility would also to some degree benefit civilian personnel employed at the Weapons Station. In order to maximize these benefits, any and all lease agreements between the Navy and BART should include provisions requiring the design of all facilities constructed by BART on Station land to also provide capital improvements for vehicular and pedestrian access from the Weapons Station to BART facilities, to the extent consistent with Weapons Station security requirements.

On the other hand, the proposed construction of a BART station on Weapons Station land and the extension of the BART line along Route 4 **may** impose future restrictions on Weapons Stations operations. In order to assure itself that it is not planting the seeds of any potential land use compatibility issues, Western Division Naval Facilities Engineering Command should initiate a land use compatibility study in this area.



**Figure OR-3
LOCATION OF
PROPOSED BART
PARK AND RIDE LOT**

Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

REGIONAL ISSUE/OPTIONS

Issue 1: Ordnance operations in the Bay Region are restricted by the long route ordnance barges must travel from Naval Weapons Station Concord to NAS Alameda and Explosive Anchorages 12 and 14 and by the inability of certain ships to use the Weapons Station.

Options:

- (a) Maintain status quo.
- (b) Reactivate Pier 35 at Mare Island Naval Shipyard.

Issue 2: The proposed construction of a BART park and ride lot at the Weapons Station, and the possible construction of a North Concord BART station on this site and extension of BART along State Route 4, may raise land use compatibility issues which could potentially impact Weapons Station operations.

Options:

- (a) Maintain status quo.
- (b) Initiate Land Use Compatibility Study of this issue.

VIII. SUPPLY

For analytical purposes, the supply functional system in the Bay Region can be divided into two components. One component comprises the supply functional system as it directly supports the operating units of the Pacific Fleet--aircraft, submarines, and ships—including both units homeported in the Region and units homeported elsewhere. A second component includes those aspects of the supply function which support the Shore Establishment, which in turn provides fleet support. Both of these components are analyzed below.

The scope of the analysis of the supply functional system is defined by the geographic limits of the Bay Region, although it is necessary to make some references to elements of the integrated Navy supply system which exists outside the Region. Given this scope, this analysis does not concern itself with the specifics of supply support of Fleet units physically located outside the Region.

FUNCTIONAL SYSTEM OVERVIEW

Objectives of the Function

The overall objective of the supply function can be defined as providing the logistical and material support required by the aircraft, submarine, and surface ship units of the Fleet and by the Region's shore establishment so they may fulfill their assigned missions. This support takes many forms, including the provision of foodstuffs, repair parts, consumables and major equipment. Many of the requests for these items occur on a regular basis. Other requests, especially those which result from equipment casualty, are irregular and unpredictable. In all cases, the measure of the supply system's effectiveness is its ability to respond in a timely manner so that operational commitments can be kept.

General Characteristics and Operations

Reduced to its basic elements, the supply system in the Bay Region functions to move material, equipment, etc. from their points of origin, the majority of which are outside the Region, to locations within the Region where they are prepositioned for delivery on demand to the operating units of the Pacific Fleet, either at locations within the Region or at overseas locations, and to Shore Establishment Activities. The focus of the supply system within the Region is the Naval Supply Center located on Navy-owned land at the Oakland Middle Harbor. NSC Oakland is unique in that it controls the land it occupies; all other naval supply centers are tenants of other commands. NSC Oakland is also distinguished from other supply centers located on the Pacific Coast in that its principal business is the support of the Fleet located throughout the Pacific. By comparison, Naval Supply Center San Diego is principally engaged in the direct support of Fleet units homeported in the San Diego Region and provides only minimal support to units located outside this Region. Naval Supply Center Puget Sound likewise has its major orientation within its home region; its principal customer is Naval Shipyard Puget Sound.¹

¹ Interview with Commanding Officer, NSC Oakland, 13 December 1983.

Within the Region, NSC Oakland is functionally linked with the various activities which provide or could potentially provide berthing or landing field facilities to operating Fleet units. The nature of these functional linkages are described below in another section. In general terms, the types of supply support which is provided through these links may be divided into four categories:

- Material support - issue and delivery of material, broadly defined to include repair parts, consummables, foodstuffs, equipment, etc.;
- Purchasing support - purchase and delivery of material procured outside of the federal supply system;
- Contracting support - procurement of contract services and supervision of contracts; and
- Financial services support - provides financial and accounting services.

These functional links take two primary forms - a communications network by which operating units transmit their requirements to NSC when they are physically located within the Region, and a transportation network by which material is moved from NSC in response to requests from operation units.

Given the overriding concern with time which is the distinguishing characteristic of this functional system, factors which affect the time required to transmit requests and move material are of prime concern. In the Bay Region, these factors include the physical distances between NSC and the ships, aircraft, and submarines and Shore Establishment activities located in the Region; the means of transportation and routes used to transport material over these distances; and the vulnerability of the communications and transportation networks to disruption.

REGIONAL CONTEXT

Relationships to Other Functional Systems

The supply functional system is closely linked to many other functional systems in the Bay Region. Because of the scope of these functional links, supply is one of the few functional systems which is truly regional. These functional lines are illustrated in Table SP-I.

Relationship to Civilian Community

The supply functional system relates to the civilian community in the Bay Region in two primary ways. One, the system employs civilians, and two, the system purchases material items within the civilian community when it cannot provide them from within its own system. To a lesser extent the system turns to the civilian community for a variety of services provided on a contract basis, e.g., food service, sanitation, and transportation. Finally, the system may interface with civilian agencies with regulatory jurisdiction over its activities, e.g., storage of hazardous materials.

Table SP-1: Relationship of Supply to Other Functional Systems

<u>Functional System</u>	<u>Affected Activities</u>	<u>Type of Support Provided (P) or Received (R)</u>
Aviation	NAS ALAMEDA NARF ALAMEDA NAS MOFFETT FIELD	P - Homeported Aircraft Carriers P - Reserve Aircraft Squadrons P - Major Materiel Support of Depot Level Maintenance Facility P - Major Material Support of Aircraft Intermediate Maintenance Department Which supports P-3 Squadron
Communications	NCS STOCKTON NAVSECGRUACT SKAGGS ISLAND	P - Materiel Support to Activity and Communications Equipment R - Communications Support via AUTODIN P - Material Support to Activity and Communications Equipment
Fleet Berthing	NAS ALAMEDA NSC OAKLAND NAVSHIPYD MARE ISLAND NAVWPNSTA CONCORD NAVSHIPYRD MARE ISLAND SUPSHIP SAN FRANCISCO	P - Homeported and Transient Units P - Major Materiel Support of Depot Level Maintenance Activity P - Limited Materiel Support to Support Intermediate Level Maintenance By Civilian Ship Repair Facilities
Ordnance	NAVWPNSTA CONCORD	P - Materiel Support to Activity
POL	POINT MOLATE FUEL DEPOT	P - Operates Point Molate as Fuel Department of NSC
Training	NAVSTA MARE ISLAND and TREASURE ISLAND; NAVSECGRUACT SKAGGS ISLAND	P - Materiel Support to Training Commands
Facilities and Maintenance	ALL	P - Material Support to Public Works Center (PUC) and to Public Works Departments of Activities Outside PUC Service Area R - Facilities Maintenance Support from PUC
Health Care	NAVHOSP OAKLAND	P - Limited Material Support R - Medical Care for NSC Personnel

OPERATIONAL ELEMENTS

In operational terms, the Regional supply system can be broken down into several elements. One element is the organizational framework which defines the relationships and interlocking responsibilities between NSC Oakland and its customers. A second element is the system for communicating between these various entities. A third component is the physical plant used to store and retrieve material and the fourth is the system(s) used to transport material from its storage point to the end-user. The following discussion of the operation elements of the supply system is very basic and is designed for readers who are not familiar with the Navy Integrated Supply System. Those with this knowledge may wish to pass over this discussion and proceed to "Analysis of Operational Elements."

Organization

Afloat Organization. The basic unit level of the supply functional system afloat consists of the allowance materials a ship is authorized to stock to sustain operations under specified maintenance concepts for a stated period. Ships' allowance materials are managed by the shipboard supply department, which stands at the consumer end of the supply organizational hierarchy. Afloat supply functions are categorized into material support and service functions.

The first echelon of afloat resupply is that material positioned in ships of the mobile logistic support forces; the second echelon of resupply is that material stocked at ashore activities for resupplying the operating forces. Fleet units in United States territorial waters are supported by the permanent Naval shore establishments, including Naval supply centers and depots, Naval shipyards, and other activities.

In the Bay Region, afloat units and their supply departments are physically located at Naval Station Mare Island, Naval Air Station Alameda, Naval Supply Center Oakland, and Naval Shipyard Mare Island. Aircraft units are located at Alameda and Naval Air Station Moffett Field.

Ashore Organization. The basic unit of the supply functional system ashore is the supply department or material management/control department which manages material used to support ashore activities with operational missions. Examples of such units include the Supply Department Naval Communications Station Stockton, which devotes approximately 60% of its ready supply of line items to the support of its communications mission, and the Material Management Department at Naval Air Rework Facility Alameda, which devotes all of its ready supply stock to the repair of aircraft.

Other ashore supply or material management/control departments which support operational functions include Supply Department, Naval Shipyard Mare Island; Supply Department, Naval Air Station Moffett Field; Supply Department, Naval Security Group Activity Skaggs Island; Supply Department, Naval Station Mare Island; Supply Department, Naval Station Treasure Island; and Material Management Department, Supervisor of Shipbuilding, Conversion and Repair Hunters Point.

The Navy Supply Center. Afloat and Ashore Supply Departments or Material Management/Control Departments in the Bay Region receive their primary support from Naval Supply Center Oakland, which is a stock point. As a stock point, the primary effort of the Supply Center is devoted to procuring, receiving, storing,

issuing, and shipping or making other disposition of material. Afloat and ashore units send requests to NSC, which ships the material and bills the units for payment. As part of its responsibilities, NSC informs inventory control points of material shipped so that the inventory control points can keep track of the inventory level and determine when to buy or direct shipment of additional material.

Naval Supply Center performs a variety of Fleet service functions, including:

- personally contact the ship immediately upon its arrival in port for the purpose of providing the supply officer with current information concerning available facilities and local procedures for obtaining supplies and services;
- conduct internal follow-up as necessary to insure that the required material is procured, assembled, and delivered alongside in time to meet the operating schedule of the ship;
- furnish requisition status information and other material, such as copies of applicable shore contracts and shopping guides;
- provide other services, such as technical library assistance and material identification assistance;
- provide predeployment supply assistance to those ships designated by type commanders; and
- upon written request from a deployed ship, hold material until ship's arrival and coordinate the necessary functions to insure proper staging of material pending ship's arrival.

NSC Oakland stocks Navy, Defense Logistic Agency (DLA), and General Services Administration (GSA) cognizance material for issue to supported units. In addition to serving as a Navy stock point, NSC Oakland is a specialized support point (SSP). An SSP is a stock point which has been authorized to receive, store, and distribute a tailored range of DLA owned materials for direct support of specified customers. The DLA materials that are stored and issued by Navy stock points designated as SSP are DLA owned and, therefore, managed as "wholesale" stock. All other DLA materials held by Navy stock points are Navy owned because they were purchased from the cognizant Defense Supply Centers. These DLA materials are managed as "retail" stock.

Communications

Requests for material originating from afloat and ashore supply departments are transmitted to NSC Oakland by a variety of methods, depending primarily on the priority of the request, and in the case of afloat units, whether the ship is at sea or in port in the Bay Region. Over 90% of all requisitions and related demand data comes into NSC via the Automatic Digital Network (AUTODIN).

The AUTODIN system requires access to an ashore Naval Telecommunications Center and it is used for low priority requisitions. At the other end of the communications spectrum is the personal visit to NSC, the least frequently used method of communications which is reserved for the highest priority items. At NSC, the personal visit takes one of two forms - bearer walk through (virtually immediate delivery of the requisitioned item to the bearer of the requisition) and Oak-a-Matic

(delivery of the requisitioned item to the requisitioner within 24 hours of personal submission of the requisition). Between the range defined by AUTODIN and personal visit are other means of communicating supply requisitions, including Naval message, U.S. Mail, telephone, and computer terminal. Of all of these methods, the computer terminal is superior because of its ability to directly access and interact with the main stock file at NSC to both transmit requisitions and subsequently conduct follow-up inquiries. At present, computer terminals are used extensively within NSC for intra-center communications and by the Naval Air Rework Facility to communicate with NSC. Only one other shore activity, Naval Station Mare Island, can requisition material from NSC via computer. In addition, NSC has two portable computer terminals which are loaned to in-port afloat units based on need, as determined by the Inventory Control Department of NSC. These portable units are usually reserved for use by the large combatant units.

Regardless of how they are transmitted, material requests are channeled to the Data Processing Department (DPD) at NSC where they undergo demand processing. Requests are screened to determine if the material is at NSC Oakland. Requests for material not in stock are automatically referred to other stock points. If material is stocked by NSC Oakland, DPD produces a form 1348-1 for the request and this document is distributed to warehouse work centers for action.

Storage and Retrieval

Material held in stock by NSC pending future requests by afloat units is stored in a manner depending on whether it is "bulk" (large, heavy items, e.g., steel plate), "bin" (small light items, e.g., pipe fittings), or in some other form. How material is stored in large part determines the ease with which it may be retrieved for ultimate delivery to a customer.

Until recently NSC relied exclusively on conventional warehouse storage and manual retrieval from shelves or other physical locations within them. The supply center controls warehouse space at its main site in Oakland and at the Alameda Facility and Alameda Annex. In March of 1984, NSC began acceptance testing on the Navy Integrated Storage Tracking and Retrieval System (NISTARS), an automated warehousing system for bin material, at Building 422 at its main site. A similar system is being installed at Building 9 at Naval Air Station Alameda. Automation of fast moving bulk material is programmed for 1980.

Delivery

With one exception, material is delivered from NSC Oakland to its regional customers by truck delivery through the Bay Area Local Delivery (BALD) system, which is operated by Public Works Center San Francisco Bay. The BALD system comprises five routes originating from NSC Oakland and their names, frequency, and delivery points are shown in Table SP-2.

The one exception is Naval Communications Station Stockton, which receives deliveries from NSC by a private trucking company. Deliveries are made every 10 days to 2 weeks. If Stockton has an immediate need for material, it will be picked up by the activity's own vehicle which makes a daily run during the work week to various Naval activities in the Central Bay Region.

Table SP-2: Bay Area Local Delivery System (BALD) Schedule and Delivery Points

Stake #1 - Mare Island

Daily run Monday-Friday. Departs 1030

Delivery Points:

- Submarine Group, Bldg. 1320
- Mare Island Receiving, Bldg. 483
- Naval Exchange, Bldg. 523
- Electric Command, Bldg. 527
- Supply Activity, Bldg. 289
- Traffic Division, Bldg. 207
- DryDock Shipment - Ships in DryDock
- Piers - Ships material shipside
- Coastal Rivers (Special Boat Unit), Bldg. 762
- Marine Barracks, Bldg. H-37
- Combat Tech School, Bldg. H-71

Stake #2 - West Bay

Daily run Monday-Friday. Departs 1030

Delivery Points:

- Coast Guard Office, Bldg. 2, Yerba Buena Island
- Naval Support Activity, Bldg. 260, Treasure Island
- Coast Guard Office, 630 Sansome Street, San Francisco
- Ships at commercial piers, San Francisco
- Todd Shipyard, San Francisco
- Presidio (Provisions), Bldg. 1243, Presidio
- Presidio Receiving Office, Bldg. 661, Presidio
- AAA Shipyard, Ships, Hunters Point
- Supervisor Shipbuilding, Bldg 813, Hunters Point
- Coast Guard Air Station, International Airport
- Western Division Facility, Bldg. 807, San Bruno
- Moffett Field, Bldg. 144, Moffett Field

Stake #3 - Regional

Daily run 4 times to all points within 50 mile radius.

Delivery Points:

- NAS Alameda Receiving, Bldg. 8, NAS Alameda
- Ships at Piers, NAS Alameda
- Provisions, Alameda Facility
- Airport, Oakland
- Airport, San Francisco
- Hospital, Oaknoll
- Priorities to any point supported.

Stake #4 - Naval Air Rework Facility

Daily run 4 times to NARF. No cut-off. Continual runs to 1500.

Delivery Points:

- NARF NAS Alameda, Bldg. 5, 400, 162, and others if load dictates. Priorities to shipside or other points in close proximity so as not to delay NARF deliveries.

Mail Truck - Pt. Molate, Concord, Skaggs Island

Daily run Monday-Friday. Departs 0900

Delivery Points:

- Fuel Depot, Pt. Molate
- Naval Weapons Station, Bldg. 1A-5, Concord
- Naval Security Group, Skaggs Island. (If necessary - to Mare Island)

Other Naval activities in the region also supplement BALD service with their own delivery service. Both Naval Station Treasure Island and Naval Air Station Moffett Field send trucks daily to NSC for material pick-ups.

Customers located outside the Bay Region and thus beyond the territorial limits of the BALD system may receive material by U.S. mail, commercial parcel service, air or rail freight, or by ship. Large shipments requiring ship delivery are consigned to the Military Traffic Management Command (MTMC), a joint military command located at the Oakland Army Base. MTMC will in turn relay the shipping request to Military Sealift Command Pacific (MSCPAC), who will contract with a private shipping company. Most commonly, Navy material destined for overseas delivery will leave the Bay Area on a chartered civilian, rather than military, ship outbound from the Port of Oakland.

ANALYSIS OF OPERATIONAL ELEMENTS

Organization

The past two decades have witnessed the centralization of the supply function within the Bay Region. Beginning in 1958, system stock was gradually transferred from Naval Shipyard Mare Island and Naval Shipyard Hunters Point to NSC Oakland. This transition was completed in 1971. More recently, under the Shore Establishment Realignment (SER) Program, the aviation supply function at Naval Air Station Alameda was transferred both physically and organizationally to NSC. Prior to SER, NAS Alameda had a large supply department which stocked a large volume of material for overseas aviation support, as well as for support of the Naval Air Rework Facility. Since the execution of SER, NSC has become the major source of supply support for the NARF.

The effect of this centralization is in part shown by Table SP-3, which lists the top ten customers of NSC during a recent typical month. The NARF and NAVSHIPYD Mare Island rank first and fourth, respectively. Other effects of centralization relate to the other operational elements of the supply function and are discussed below. Of particular importance are effects relating to disruption of the regional transportation network, due to either natural disaster or hostile action. This network is used on a daily basis by the supply delivery system linking NSC with its geographically dispersed customers.

Communications

The centralization of the supply function within the Region has greatly underscored the need for quick and efficient communications between NSC and its regional customers, especially those in geographically remote locations. For a variety of reasons, the computer terminal is the preferred means of communication. Chief among these reasons is the on-line interactive nature of the computer. For example, an error in a computer generated requisition can be immediately communicated to the sending terminal and corrected at once. Once a requisition has been entered into the supply system, the originator is able to directly follow-up its status through computer inquiry.

Until recently, the supply system was reluctant to grant direct access to central stock file data via remote computer terminals. This attitude has changed and current thinking is that remote terminals should be given to any Bay Area activity which requests one. Now the problem is one of providing capacity to meet the expected demand. In part this is a hardware problem that owes its origin to the Burroughs computer equipment which is widely used throughout the Naval supply system. This equipment was designed for the management of extremely large data files; it was not designed for telecommunications and access via remote terminals which requires the capabilities to be on-line, interactive, and immediately responsive.

In the fall of 1984, NSC will inaugurate the first phase of SPLICE to bridge the computer gap for the next six years until the replacement of the Burroughs equipment. This new hardware will allow expansion of present capacity to provide remote terminals, but it will not achieve the goal of serving every activity that requests a terminal. First priority for remote terminals will be given to ships, but remote access from pierside will ideally be served by telephone lines installed and exclusively dedicated to this purpose. This design requirement should be factored into pier renovation and new construction projects to support expanded homeporting in the Region. Second priority for remote terminals will be given to Shore Establishment activities. Based on comments expressed during interviews pertinent to the supply function analysis, the installation of computer terminals at ashore activities will eliminate many of the feelings of isolation now experienced by geographically remote activities.

Table SP-3: Top Ten Customers of Naval Supply Center Oakland, February, 1984

<u>Activity</u>	<u>Requisitions Submitted/Filled</u>
1. Naval Air Rework Facility	17,628/5,379
2. Naval Supply Depot Subic Bay	6,103/5,489
3. USS Enterprise	5,745/3,081
4. Naval Shipyard Mare Island	4,996/2,560
5. USS Gompers	3,648/2,336
6. USS Ford	3,621/1,812
7. Naval Supply Center Oakland	3,456/2,659
8. Naval Air Station Moffett Field	3,155/2,659
9. Naval Supply Center Pearl Harbor	2,844/2,614
10. USS Vandergrift	2,513/1,142

Storage and Retrieval

The Navy Expansion Program (NEP) inaugurated by the current Presidential administration has resulted in a significant decrease in the Navy-wide vacancy rate for warehouse space. This phenomenon has in turn caused warehouse space within the Region to become a subject which has recently received a high degree of command level attention.¹ At its simplest, the problem is one of the relationship of the supply of warehouse space within the Region to the demand expected to be generated by plans to homeport additional ships in the Region.

A complicating factor is the location of one of the Region's major warehouse assets, 5.4 million square feet of storage area, at Naval Communications Station Stockton, a distance of approximately 68 nautical miles from the Golden Gate Bridge. These distance and time factors are most frequently cited by those arguing against expanded Navy use of this asset, the majority of which is leased to non-Navy DOD tenants and to the GSA. It is worth recalling, however, that the integrated Navy supply system also encompasses both DLA and GSA, major tenants of Stockton. Accounting for all Navy and Navy supply-related tenants at Stockton, this activity represents a supply resource of 4.2 million square feet. In contrast, NSC Oakland is experiencing a temporary bind for space associated with its vacating the Alameda Annex and the start-up of the NISTARS program.² This problem is expected to be alleviated by June 1984, but its resolution will still leave NSC with no unused, excess warehouse space.

On the demand side, the additional warehouse needs resulting from the homeporting of additional ships in the Bay Region have yet to be determined. In addition to warehouse space required for system stock, increased homeporting will generate demands for covered storage space and uncovered laydown areas for ships' material.

Delivery

Naval Public Works Center provides the vehicles and drivers for the BALD delivery service. As the consequence of a recent Commercial Activity study, PUC has scaled down the number of people assigned to the BALD system. This has resulted in some decline in the level of service to activities which are not exclusively served by their own BALD run (see Table SP-2).

The homeporting of ships at Naval Station Treasure Island will likely require some upgrading of the level of BALD service to this activity. Presently Treasure Island is serviced by one delivery point per day. At least one additional delivery point will be required at pierside, with an additional delivery point at the New Ship Intermediate Maintenance Activity (SIMA) a possibility. The need for some form of waterborne delivery service between NSC and Treasure Island to avoid congestion on the San Francisco-Oakland Bay Bridge has been informally discussed. Given the high capital and operating costs of such service, waterborne delivery would likely be a delivery of last resort.

¹ Commander, Naval Supply Systems Command letter 0624/RPA Ser 520 of November 4, 1983; Commanding Officer, Naval Communications Station Stockton letter 03:if Ser 2200 of November 17, 1983; and Commanding Officer, Western Division Naval Facilities Engineering Command of 5 December 1983.

At present, traffic congestion on the regional highway network has had limited impact on the BALD system. This is in large measure due to the scheduling of BALD departure times from NSC to avoid the morning peak period traffic, and to the fact that some delivery routes run in the reverse commute direction. As traffic conditions worsen in the future (see Ground Access Functional System Analysis), impacts on the BALD system may become significant.

A problem with a much lower probability than traffic congestion, but of much greater consequence, is the destruction of all or part of the regional transportation network used by the BALD system due to natural disaster or hostile action. Destruction of the regional transportation system would significantly degrade the operation of the supply functional system. For example, the two largest regional customers of NSC Oakland - Naval Shipyard Mare Island and Naval Air Station Alameda - are accessible to BALD delivery trucks via bridges or tunnels. The potentially Region-wide impacts of bridge and tunnel destruction are discussed in the Ground Access Functional System Analysis.

Break-Bulk Cargo Capability

Presently NSC Oakland receives and ships almost all of its waterborne cargo via container ships using the facilities of the adjacent Port of Oakland. Consequently, the active waterfront facilities of NSC, including Piers 4 and 5, the North Marginal Wharf, and associated warehouses, are not used for receiving and shipping material to Navy activities overseas. This situation would change dramatically in the event of an emergency. During such periods the overall throughput of NSC would increase substantially and the capability to load break-bulk cargo for delivery to overseas destinations without container facilities would be absolutely essential. Preserving these facilities for such contingencies is difficult when, in the interim, as the result of reliance on nearby civilian container facilities, they appear to be underutilized and thus vulnerable to excessive pressures from GSA or civilian-initiated requests for transfer to the private sector.

REGIONAL ISSUES AND OPTIONS

Issue 1: The centralization of the supply function within the Region has resulted in a high degree of dependency on its communications and delivery functional subsystems, thus increasing its vulnerability to breakdown when these subsystems malfunction.

Options:

- (a) Maintain status quo.
- (b) Decentralize Supply Functional System.
- (c) Upgrade communications and delivery subsystems.

²Commanding Officer, NSC Oakland, interview of December 19, 1983.

- (d) Partially decentralize supply system and concurrently upgrade communications and delivery subsystems.

Issue 2: Intra-Regional communications within the Supply Functional System is constrained by its currently technologically unsophisticated telecommunications system.

Options:

- (a) Maintain status quo, i.e., rely on the present best efforts of NSC Oakland to upgrade the Regional Supply Telecommunications System.
- (b) Support the efforts of NSC Oakland by developing a Regional Telecommunications Policy, which would address supply as well as other communications needs, and propose a strategy for implementing this policy.

Issue 3: A major supply functional system asset with potential for regional significance, i.e., 5.5 million square feet of warehouse space located at NCS Stockton, is now largely under non-Navy control and would be unavailable to meet Navy generated needs associated with the Navy Expansion Program (NEP) and other actors in the short-and mid-range future.

Options:

- (a) Maintain status quo.
- (b) Develop a regional policy and implementation strategy for the return to Navy control of NCS Stockton warehouse space.

Issue 4: The BALD system is potentially overextended and would be impacted by future increases in traffic congestion or destruction to bridge and tunnel lines within the regional transportation network.

Options:

- (a) Maintain status quo.
- (b) Develop a regional policy and implementation strategy to enable Public Works Center to devote more resources to the BALD system.
- (c) Develop a regional contingency plan for the BALD system addressing alternative routes/means of delivery in the event of specific failures in the regional transportation network.
- (d) Pursue both b) and c).

Issue 5: The break-bulk cargo capability of the NSC Oakland waterfront is vulnerable to transfer from Navy control due to its apparent under-utilization.

Options:

- (a) Maintain status quo.

- (b) Thoroughly document the importance of this capability in the Regional Plan, as well as the activity master plan.

IX. PETROLEUM, OIL AND LUBRICANTS

OVERVIEW

Objectives

The Navy petroleum, oil, and lubricants (POL) system provides fuel for most Department of Defense activities located in the Bay Region, including the Naval shore establishment and the ship and aircraft units of the Fleet this system supports. The POL system is closely related both organizationally and functionally to the supply system and has similar objectives: the receipt, storage, management and timely delivery of POL products to its customers. The POL system is critical to military readiness for it is the source of conventional fuels and lubricants. In addition, the Navy POL system in the Bay area is part of a nation-wide system of pre-positioned war reserve stocks.

General Characteristics

The types of products handled by the POL system include diesel fuel (marine) (DFM), aircraft jet propulsion fuel (JP-5), and multi-products, such as lubricants, turbine oils, hydraulic oils, and mobil gas. Point Molate Fuel Depot is the central receipt and distribution point of the POL system. DFM and JP-5 are normally received at the Fuel Department via a commercial pipeline, barge, or Military Sealift Command tanker ship. From Point Molate POL products are distributed to the end-users. Approximately ninety-five percent of the POL is distributed from Point Molate to Navy activities via barge, either owned by the Navy or commercial contractors. The multi-product quantities are generally distributed in increments of 8,000 gallons or less by tank trucks or drums. POL products are also distributed from Point Molate directly to ships alongside the Depot's fueling pier. For reasons discussed below, the use of pipelines for POL distribution has received considerable discussion in recent years.

REGIONAL CONTEXT

Relationships With Other Functions

The relationships of POL to other functional systems are shown in Table POL-1. Particularly strong relationships exist with the aviation and fleet berthing functional systems.

Relations With the Civilian Community

The POL functional system is closely related to the civilian community. The San Francisco Bay Region is a major refining and storage center of commercial oil companies. The Department of Defense obtains petroleum, oils, and lubricants from local refineries. The bidding process is used to select government suppliers.

Table POL-1: Relationship of POL to Other Functional Systems

<u>Functional System</u>	<u>Affected Activities</u>	<u>Type of Support Provided (P) or Received (R)</u>
Aviation	NAS Alameda NAS Moffett Field NALF Crows Landing	P - JP-5
Fleet Berthing	NAS Alameda, NSC Oakland, NAVSTA Treasure Island, NAVSHPYD Mare Island	P- DFM for conventionally powered homeported and transient units, and yard craft
Supply	NSC Oakland	R - Management support, Pt. Molate is managed by NSC Fuel Department
Facilities Maintenance	PWC San Francisco Bay Oakland	R - Facilities and maintenance support
Health Care	NAVHOSP Oakland	R -Secondary and tertiary health care for systems personnel
Housing	PWC San Francisco Bay Oakland	R - Management of 29 housing units located at Pt. Molate
Personnel Services	NAS Alameda NAVSTA Mare Island	R - Commissary and exchange facilities

The Southern Pacific Pipeline Company (SPPL), which serves the Navy Fuel Depot, provides an inter-connecting commercial fuel oil pipeline distribution system to oil companies located in the East Bay.

Public highways and waterways are used by the POL system for the transportation of POL products. Commercial barge companies are used for deliveries to Naval Air Station Moffett Field.

Associated with the POL system's use of public waterways and highways is the potential for their contamination through oil spills and the escape of fumes. To minimize this potential and mitigate the impacts of such events if they do occur, the Navy carefully monitors fueling operations and maintains an extensive amount of containment and clean-up equipment at Point Molate and all other Naval activities where over-the-water fuel operations occur. The Coast Guard has responsibility for controlling environmental damage and cleaning up oil spills related to operations by all maritime vessels, both civilian and military. The Navy equipment is available to the Coast Guard, as needed, for use in this function.

Point Molate Fuel Depot, the central receipt, storage, and distribution point of the POL system, is closely related to the civilian community and the public's interest in the site predated its acquisition by the Navy in 1941. Main Road has always been a public right-of-way which bisects the site and separates the pier and administrative areas from the tanks in the hills. This presents a security problem since there are few security personnel and fencing is inadequate. The public has also been involved with the site through tenant activities - the City of Richmond beach and park, the Pacific Locomotive Association train yard, the public school sponsored Marine Ecology Center, and, most recently, in the documentation and designation of approximately 100 acres of the site as a National Historic Area. The public has always had access to Point Molate and views this location as a significant scenic, cultural, environmental, and recreational resource.

OPERATIONAL ELEMENTS

The POL system comprises the following operational elements:

- organization,
- primary receiving and storage,
- delivery,
- secondary receipt and storage,
- end-users, and
- pollution prevention and control.

Organization

The operational elements of the POL system, as listed above, are under the organizational control of several separate commands. The Fuel Department of Naval Supply

Center Oakland controls Point Molate Fuel Depot, portions of the delivery element, and major portions of the pollution prevention and control element. The chain-of-command of NSC Oakland is shown in Figure POL-1. It is through this chain that these elements come under the jurisdiction of the Navy Petroleum Office, which exercises jurisdiction over all technical aspects of Navy POL, including both operational aspects and facilities at fuel terminals and depots such as Point Molate.

Defense Fuel Supply Center (DFSC), one of six defense supply centers under the control of the Defense Logistics Agency (DLA), owns and controls the petroleum assets of the POL system, which include war reserve stocks maintained at levels set by DFSC. DFSC, located in Washington, D.C., is not directly responsible for inventory control; this function is performed by its field office, Defense Fuel Region West (DFRW), located in San Pedro, California. As the owner and manager of the petroleum assets, DFSC negotiates and executes contracts with commercial suppliers of the POL products consumed within the Region. In a related capacity, DFSC, in conjunction with Military Traffic Management Command (MTMC), the DOD single manager for transportation, is responsible for delivery of POL products delivered by commercial barge. Decisions relating to shifting from commercial barge delivery to pipeline delivery are the joint responsibility of DFSC and MTMC.

Secondary POL storage points within the Region are under the organizational control of the activities where they are located, which also exercise responsibility over portions of pollution prevention and control. POL end-users are similarly under the independent control of the ashore and afloat commands.

Primary Receiving and Storage

Point Molate Fuel Depot, located on the east shore of San Pablo Straits north and adjacent to the San Rafael Bridge as shown in Figure POL-2, is the primary POL receiving point. Currently, Point Molate receives about 70% of its POL products from nearby commercial oil pipeline refineries, via a commercial pipeline owned and operated by the Southern Pacific Pipeline Company. The remainder is received from tankers via a 1,400 foot long fueling pier shown in Figure POL-3.

The current 70%-30% split in POL receipts is a function of the geographic locations of the civilian suppliers who successfully competed for and were awarded POL supply contracts. If future contracts are awarded to suppliers located outside the Region, most likely in Southern California, the percentage of POL received by tankers would correspondingly increase.

Bulk POL is stored in underground tanks distributed over the site. Primary storage capacity is about 1.1 million barrels - 653,247 barrels of tankage are used for DFM storage; 417,244 barrels of tankage are used for JP-5, and the remaining 93,414 barrels of storage are used for ballast holding and fuel reclamation. The capacity of the secondary storage system is about 25,000 gallons.

Delivery

POL is delivered to secondary storage points and end-users primarily by barge, either Navy barges or commercially contracted fuel barges. Other current delivery methods include fueling at the Point Molate Fuel Pier, tanker truck, and fueling at anchorage. A potential fuel delivery method is by pipeline.

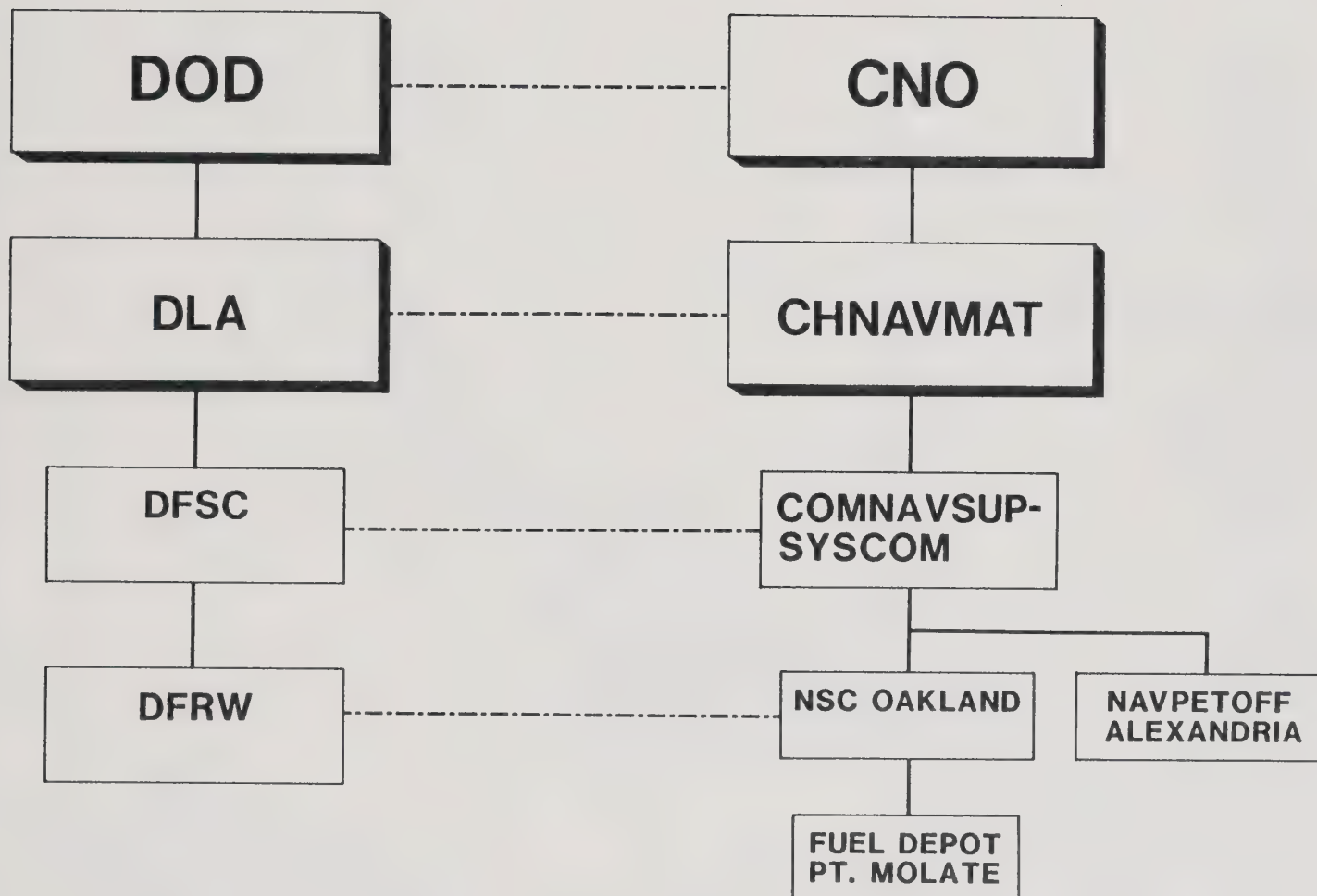


Figure POL-1
**ORGANIZATION OF POL FUNCTIONAL
SYSTEM**



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

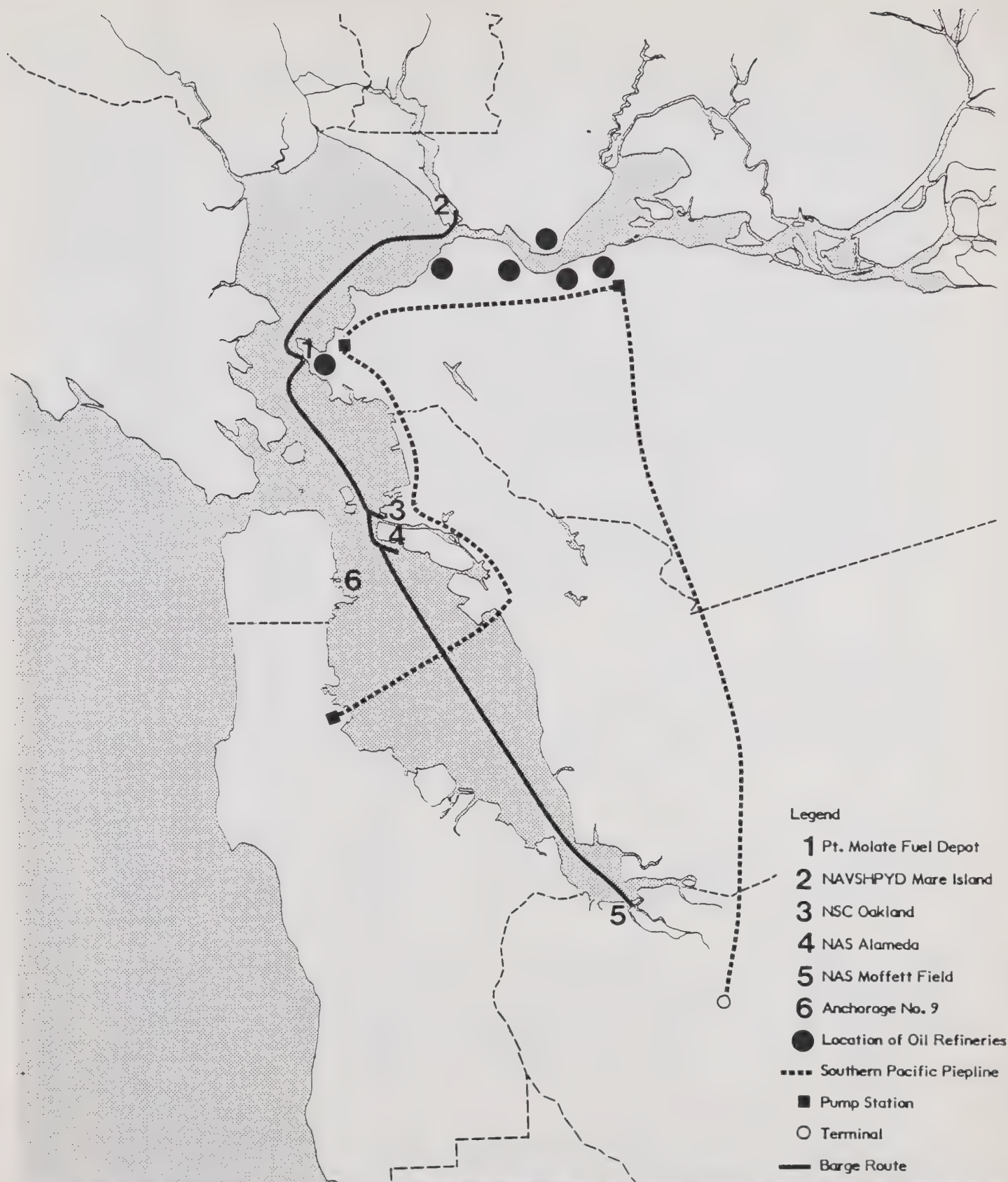
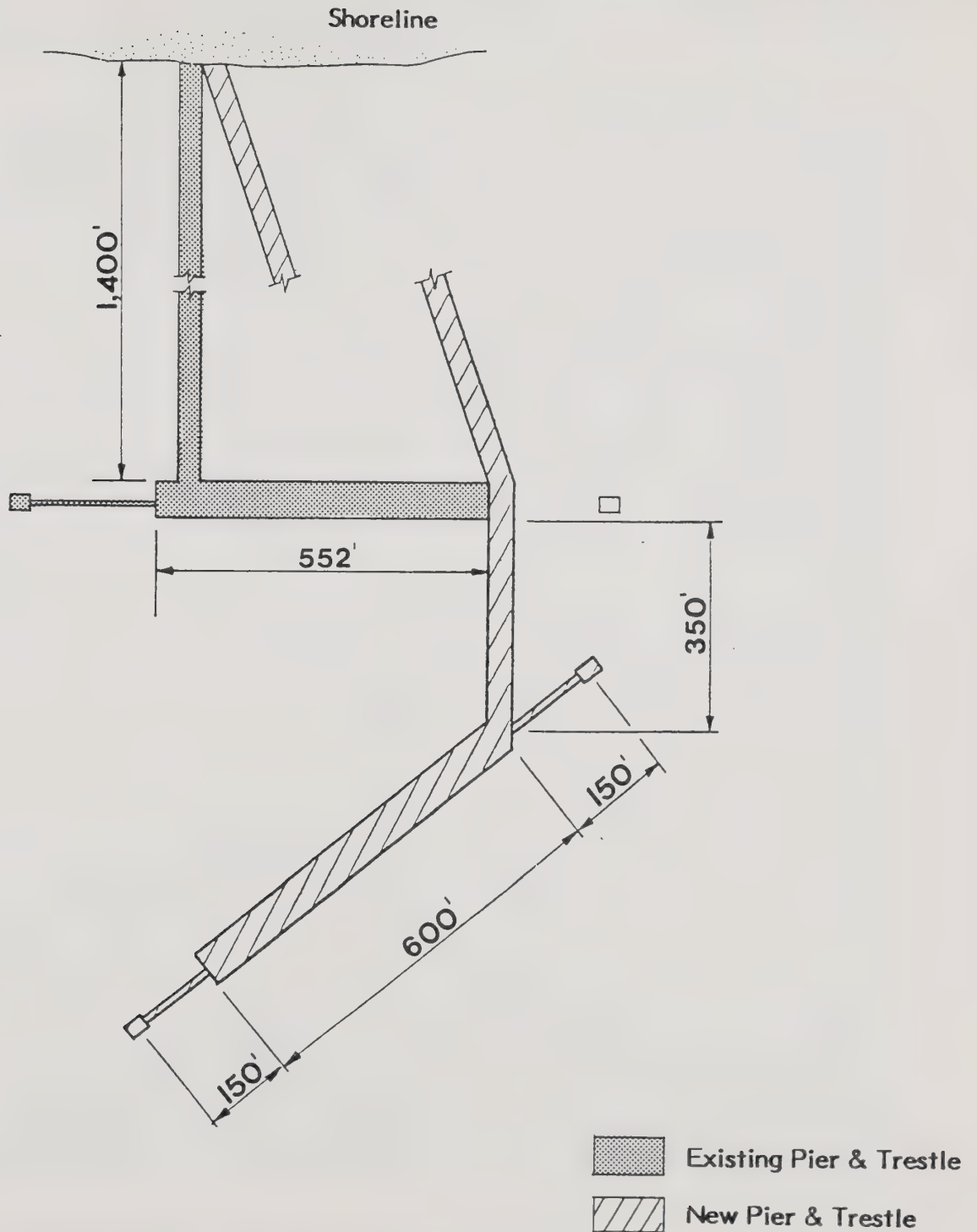


Figure POL-2
LOCATIONS OF POL
ELEMENTS



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**



Source: Assessment of Berthing Requirements for Planned Ship Berthing at U.S. Naval Supply Center, Point Molate Site, Final Report Undated.

Figure POL - 3
DIAGRAM OF EXISTING
AND PROPOSED FUEL
PIER AT PT. MOLATE



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

Fuel Barge. If a ship needs fuel only to top-off its tanks, or if repair work or its operational schedule require, a ship may fuel at its berth. For these and related reasons, most combatant ships that are homeported in the Bay Area tend to be fueled at their berths. The fueling of ships at pierside is from barges nested alongside the ship.

As shown in Table POL-2, ships can fuel at a pierside, depending on individual physical limitations, at the following locations: NSC Oakland, NAS Alameda, NAVSHIPYD Mare Island, and NSC Alameda facility. Navy fuel barges also deliver to Navy ships being overhauled at civilian shipyards and repair facilities. On occasion, a ship may take on fuel while at anchor. General Anchorage No. 9, located south of the San Francisco-Oakland Bay Bridge and to the northeast of Hunters Point, is used for this purpose.

Activities also obtain their fuel supply by barge. Presently, close to 80 percent of all fuel pier operations at Point Molate involve loading and unloading of barges, which have become critical to the Navy POL function for the transport of fuel from Point Molate to its customers. Three barges, which vary in capacity from 2,000 to 8,000 barrels (BBL), are used by Point Molate Fuel Depot. The disadvantages of barges are that they are slow -- top speed is 7 knots -- and difficult to maneuver, requiring a full tug boat crew of 4 to 7 people to transport fuel on the Bay. The one way trip from Point Molate to NAS Alameda or NSC Oakland requires about three hours using Navy barges.

Deliveries of JP-5 to NAS Moffett Field are made by commercially operated barges at the frequency of 18,000 barrels (BBL) three times a month. Since the EXXON refinery currently has the contract to provide JP-5, the commercial barge loads this product directly at the refinery and then makes the approximately ten hour transit to the fuel pier located in the Guadalupe Slough.

Siltation of the Slough requires regular maintainance dredging of the navigable channel which is used exclusively by the Navy incident to its fueling operations.¹ Dredging of the slough is currently performed on a ten year cycle. The next dredging of Guadalupe Slough is scheduled for 1989 and it is estimated that it will cost \$600,000 in 1983 dollars.² Under current conditions, fuel barge deliveries must be carefully timed with the tide; and a 20,000 BBL capacity barge, which is the delivery vehicle preferred by the commercial carrier, can carry only 15,000 to 18,000 BBLs.

Even with these precautions, groundings are not unusual. This timing requirement, combined with the ten hour transit time from the refinery to end-user, makes the scheduling of deliveries to Moffett Field extremely difficult and sometimes disruptive for the receiving activity when circumstances dictate delivery outside of regular working hours. In response to the increasing siltation of the Guadalupe Slough, the commercial barge operator has requested that the Navy either dredge the channel or compensate him for the "deadhead" or unused capacity of his barges required to safely navigate the channel.

¹The preferred alternative of NASA, a tenant of NAS Moffett Field for the transshipment of the space telescope being constructed under contract by the nearby Lockheed Corporation, is by water via the Moffett Field fuel pier. This one-time use of the pier would require dredging the channel prior to 1989.

²See Note 1.

Table POL-2: Regional Fueling Locations by Ship Class

Type/Class	Standard Classification	Point Molate	NSC Oakland	NAS Alameda	NAVSHIPYD Mare Island	NSC Alameda Facility	NAVSTA Treasure Island	Hunters Point
Attack Carrier	CV	1,2	I	B,T	1,2	I	I	F
Attack Carrier Nuclear	CVN	1,2	I	B,T	1,2	I	I	F
Combat Store Ship	AFS	P	B	B	B	B	F	F
Fast Combat Support Ship	AOE	F	I	B	I	I	I	F
Replenishment Oiler	AOR	P	B	B	B	I	F	F
Oiler	AOQ	P	B	B	B	I	F	F
Tender	AD	P	B	B	B	B	F	F
Repair Ship	AR	P	B	B	B	B	F	F
Ammunition Ship	AE	P	B	B	B	B	F	F
New Cruiser and Destroyer Types	CG/DD 963	P	B	B	B	I	F	F
Frigate Types	FF/FFG-7	P	B	B	B	B	F	F
Amphib Cargo Ship	LKA	P	B	B	B	B	F	F
Mine-Sweeper Ocean	MSO	P	B	B	B	B	F	F
Military Sealift Command Pacific	Various	P	B	B	B	I	F	F
Coast Guard Cutter	WHEC	P	B	B	B	B	F	F
Fast Attack Submarine	SSN	P	T,B	T,B	T,B	T,B	F	F

LEGEND:

P - Pipeline from pier

B - Barge

T - Tanker truck

F - Potential future fueling location

I - Water depth at pier is limiting factor

2 - Clearance of Richmond-San Rafael Bridge is limiting factor

Fuel Pier. The fuel pier at Point Molate is used for delivery of POL to afloat units whose length and draft are within this facility's capabilities. The pier causeway extends 1,400 feet into San Francisco Bay and is dredged to 35 feet (MLLW). The outboard face of the pier measures 552 feet and the inboard face measures 468 feet. Mooring islands are located off the north and south ends of the pier to facilitate berthing of ships larger than the physical dimensions of the pier.

The south mooring island extends 227 feet beyond the south end of the pier; the north mooring island extends 210 feet beyond the north end. Bollard to bollard measurements between mooring islands is 989 feet; however, berthing on the outboard face is limited to ships less than 800 feet in length. Pier configuration is ideally suited for ships of replenishment oiler size (AOR class, 658 x 96 x 33.3 feet @ 38,100 tons full load), as well as Navy Oilers (AO), Combat Store Ships (AFS), and small and medium size combatants. The pier cannot accommodate the Fast Combat Support Ship (AOE), whose 40-foot maximum draft and 795-foot length would require lengthening the pier, as shown in Figure POL-2, and dredging to a project depth of 45 feet. (The issues associated with these improvements are discussed in the Operational Elements Analysis section.) The length and draft of conventionally and nuclear powered aircraft carriers also preclude their fueling at Point Molate, but the real limiting factor with these ship types is the 180 feet of clearance under the Richmond-San Rafael Bridge. Consequently, the AOE and the CV and CVN classes of ships are loaded at their berths at NAS Alameda and the former requires up to 15 barge trips for full load-out. In all cases, these barge trips, and the subsequent timely departure of the ship being fueled, can be disrupted by weather conditions on the Bay.

Due to the location of the Point Molate Fuel Pier and its orientation to the current, dredging to maintain the 35 feet project depth is an annual requirement. Recent funding constraints forced the pier to be inoperative for a period of approximately eight months until funding became available and dredging was completed in April, 1984, at a cost of approximately \$500,000.

Tanker Truck. Tanker trucks, which have a limited volume of up to 8,000 gallons, are a generally less cost effective method of delivery. At land locked naval activities, such as NALF Crow's Landing, and for low volume customers, tanker trucks are used for delivery. On occasion, tanker trucks are used to top-off the JP-5 tanks of aircraft carriers berthed at NAS Alameda.

Pipeline. Point Molate Fuel Depot is the only element of the POL system which is connected to a commercial oil pipeline delivery service. Hence, Point Molate's use of this pipeline, which is operated by the Southern Pacific Pipeline Company, is limited to receipts from its commercial suppliers and it cannot be used for deliveries. This pipeline does pass close by NSC Oakland, NAS Alameda, and NAS Moffett Field, raising the possibility to linking these activities to Point Molate via pipeline. This issue is discussed below under Analysis of Operational Elements.

Secondary Receipt and Storage

Five Naval activities within the Region function as secondary POL storage points, receiving POL products only from Point Molate and storing them for subsequent distribution to end-users located within these activities. Table POL-3 lists these secondary storage points and their approximate capacities.

Table POL-3: POL Secondary Storage Points

<u>Activity</u>	<u>Types of Fuels Stored</u>	<u>Capacity (BBL)</u>
NAS Moffett Field	JP-5	59,500
NAS Alameda	JP-5 DFM	26,200 35,700
NSC Oakland	DFM	
NAVSTA Treasure Island	DFM	15,000
NAVSTA Mare Island	DFM	51,100
NALF Crow's Landing	JP-5	3,600

Source: SCA telephone survey, May, 1984.

End-Users

POL end-users are shore activities, afloat units, and aircraft which actually consume POL products. Major combatant units usually refuel underway at sea and only top-off in port. Table POL-3 lists fueling locations within the Bay Region by ship class. Major shore establishment end-users within the Regional POL system are shown in Table POL-4. The largest modern surface ships of the Navy are now constructed with nuclear powered propulsion systems. In the future, many of the largest Navy ships in the Bay Region will be powered by nuclear propulsion. With the increase in planned ship home porting, use of conventional fuels is not expected to decline; however, demand for POL will not increase dramatically because of the nuclear powered vessels.

Oil Spill Prevention and Containment

Oil spill prevention and containment in the Bay Region comes under the jurisdiction of the United States Coast Guard Marine Safety Office located at Yerba Buena Island. By federal law, all oil spills in the Region must be reported to this Office, which will dispatch an on-the-scene coordinator to the spill site. Responsibility for oil spill clean-up rests with the party who caused the spill. Upon failure to meet this responsibility, the on-the-scene coordinator will retain a private contractor to perform the clean-up and hold the causing party financially responsible. In the event of a major oil spill, the United States Coast Guard Pacific Strike Team, located at the former Hamilton Air Force Base, may be called in to perform, supervise or otherwise assist in the clean-up work.

Point Molate Fuel Depot has at its disposal a standard Navy array of containment and cleanup equipment to meet oil spill contingencies in San Francisco Bay. Equipment and material include a 3001 DIP skimmer, approximately 3500 feet of deployable boom, two 21'-6" Boston Whalers, a work boat, absorbant mats, and accompanying communications equipment. The Depot does not have a recovery system for the

Table POL-4: Major Shore Establishment POL End-Users

<u>Location</u>	<u>Product</u>	<u>Annual Requirement (BBLS)</u>	<u>Use</u>	<u>Delivery Mode</u>
NAS Alameda	DFM	36,000	Power Generation for Cold Iron Support	Barge
	JP-5	262,000	Aviation	Barge
NAS Moffett Field	JP-5	619,000	Aviation	Barge
NSC Oakland	DFM	8,644	Material Handling Equipment	Barge
NAVSTA Mare Island	DFM	13,619	Material Handling Equipment, Support of Vessels at Berth, Yard Craft	Barge
NAVSTA Treasure Island	DFM ¹	24,800	Yard Craft	Barge
NALF Crow's Landing	JP-5	868	Aviation	Tanker Truck

Note:

1. Primary source of supply is commercial contractor.

Source: SCA telephone survey, May, 1984.

ANALYSIS OF OPERATIONAL ELEMENTS

Point Molate Fuel Pier

From a Regional perspective, there are two major problems associated with the Point Molate Fuel Pier. One, the design and location of the pier are conducive to siltation and continued operation of the pier will require a substantial, recurring investment in dredging. Maintaining the 35 foot project depth requires the annual removal of approximately 100,000 cubic yards. Two, the present physical configuration of the pier and water depths in its immediate proximity, as well as in the two channels leading southward away from the pier to the main portion of the San Francisco Bay, cannot accommodate the physical criteria, especially the 45 foot depth requirement, associated with the AOR/AOE classes of ships. Since the solution of the second problem contains the solution to the first, both are joined in the following discussion.

Western Division Naval Facilities Engineering Command recently completed a study to assess the adequacy of Point Molate for fueling and defueling the AOE and AOR classes of ships.¹ This study developed and evaluated four alternatives and the one recommended is shown in Figure POL-3. Following the recommended alternative, a 350 foot trestle would be constructed westward from the existing pier to water of about 45 foot MLLW depth. There a 50 foot wide pier, 600 feet long with catwalks and mooring platforms at each end, would be constructed at an angle of about 30 degrees to the existing pier. This alternative was in part selected because it provides the greatest opportunity to control the sedimentation and reduce the increasing annual dredging costs. Cost was also a factor. While this alternative is the most expensive to construct at \$23 Million, its lower operation and maintenance costs make it economically superior.

None of these alternatives, including the recommended alternative, would overcome two remaining problems. One, in order to comply with explosive safety quantity distance (ESQD) criteria while fueling at the Point Molate Pier, the net explosive weight (NEW) of the AOE would have to be reduced to 20 per cent of its 1.1 Million pounds capacity. Two, only dredging required in the immediate vicinity of the pier and the turning basin are included in the \$23 Million cost estimate. Excluded are the costs of deepening to 45 feet either the main ship channel leading southward away from Point Molate or the Southampton Shoal Channel to the west of the main channel. Deepening the main channel would require 8 Million cubic yards of dredging; the Southampton Shoal Channel would require 3 Million cubic yards. The Western Division study did not include costs for either of these projects. Assuming a cost of \$10 per cubic yard (including ocean disposal of dredge spoils), they would cost \$80 million and \$30 million, respectively.

At present a decision has not been made to go forward with the recommended alternative for the Point Molate Fuel Pier. This decision in part will be contingent on whether Naval Supply Center Oakland and/or Naval Air Station Alameda are connected to the SPPL and thus become capable of fueling AOR/AOE's via pipeline at pierside.

Barge Operations

As noted above, three Navy fuel barges with capacities ranging from 2,000 to 8,000 BBLS are used by the POL system. Given these modest assets, the capabilities of the barge delivery system are subject to overextension whenever the fueling of a large supply ship is required. This situation could be mitigated by acquiring more fuel barges, contracting for additional civilian barge services, changing current policy to require fueling at Point Molate pier, except for AOE's and other special circumstances, or connecting NAS Alameda to the Southern Pacific Pipeline and using this activity's pier facilities for fueling of large supply ships. This last option would also require the construction of fuel storage tanks, including settling tanks, far in excess of what currently exists within the already crowded confines of this activity. The pipeline versus barge option is discussed below.

¹Final Report: Assessment of Berthing Requirements for Planned Ship Berthing at U.S. Naval Supply Center Oakland, Point Molate Site, Contract No. N62474-82-C-0284 (undated).

Barge vs. Pipeline Delivery to NAS Moffett Field

Construction of a pipeline from NAS Moffett Field to the nearby Southern Pacific Pipeline Company (SPPL) commercial pipeline would eliminate the 20 hour round trip by barge which is currently made three times per month. In January of 1983, Defense Fuel Supply Center (DFSC) received a proposal from the John H. Kinley Company to construct a 12 mile pipeline connecting Moffett Field with the SPPL pipeline in San Jose. The per barrel rate quoted by this proposal was about .75/BBL, dropping to .65 after the initial three years. This compares with the current barge rate of .47/BBL. DFSC also expects to soon receive a proposal from SPPL and could make a decision on the pipeline alternative by July of 1984.

In past studies of the barge versus pipeline issue, this type of simple cost comparison was made and the time horizons of such comparisons extended only three to ten years into the future. Such simplistic analyses inevitably disfavored the pipeline alternative. A strict cost analysis would, however, include all the monetary costs of each alternative, including maintenance dredging for barge operations, would assign a dollar value to all tangible, non-monetary costs, such as delivery scheduling problems and delays associated with barges, and would use a time horizon related to the operational lifetime of the pipeline. Indications are that DFSC is moving toward this type of cost analysis which may yield a different result than past comparisons of the two alternatives.

REGIONAL ISSUES AND OPTIONS

Issue 1: The Point Molate Fuel Pier cannot accommodate Fast Combat Support Ships (AOE's).

Options:

- (a) Maintain status quo.
- (b) Enlarge pier, dredge pier vicinity and approach channel to project depth of 45 feet to accommodate AOE's.
- (c) Option (b) plus extend pier 350 feet to edge of natural channel (see Issue 2, Option (b)).
- (d) Construct pipeline connecting NAS Alameda with SPPL commercial pipeline and construct additional storage facilities at NAS to be able to fuel ships with both DFM and JP-5 at pierside via local distribution lines. (See Issue 3, Option (f)).

Issue 2: The orientation and location of Point Molate Fuel Pier require that it be dredged on an annual basis to maintain the 35 feet project depth.

Option:

- (a) Maintain status quo.
- (b) Extend the pier 350 feet to the edge of the natural channel.

Issue 3: The number and capacities of fuel barges is inadequate to meet the major demands occasioned by the fueling of one or more large supply ships.

Options:

- (a) Maintain status quo.
- (b) Increase size of Navy barge fleet.
- (c) Contract for additional civilian barge services.
- (d) Adopt policy requiring fueling at the Point Molate Fuel Pier with only limited exceptions related to size of ship and operational factors.
- (e) Construct pipeline connecting NSC Oakland with Southern Pacific commercial pipeline and additional storage facilities at NSC to be able to fuel ships at pierside via local distribution lines.
- (f) Construct pipeline connecting NAS Alameda with SPPL commercial pipeline and construct additional storage facilities at NAS to be able to fuel ships with both DFM and JP-5 at pierside via local distribution lines.

Issue 4: Barge deliveries to NAS Moffett Field present difficult scheduling problems, are subject to disruption by the weather, and require the periodic costs of maintenance dredging of Guadalupe Slough.

Options:

- (a) Maintain status quo.
- (b) Conduct detailed cost analysis comparing barge and pipeline alternatives, including all monetary and nonmonetary costs over the lifetime of the pipeline alternatives, and construct pipeline if found to be superior.

X. TRAINING

OVERVIEW

Objectives

As the technological sophistication of the Navy increases, Training is becoming a more important component of Naval Operations. In recent years there has been increased emphasis on training and promotion is now contingent on completing education requirements and demonstrating proficiency in appropriate technical areas.

General Characteristics

Navy training facilities in the Bay Area provide three basic types of instruction. One is technical training which is only offered at special schools. Technical training is designed to provide personnel with specialized skills and techniques for doing specific jobs. The technical training schools are offered at three levels. Most basic is the apprenticeship level or "A" school. Next are the more technically intermediate or "B" schools; and "C" schools are for very specialized training. Technical training often involves both classroom work and use of simulators, shops, or special labs. Another type of training is for operational fleet support proficiency. This is general on-the-job training needed to develop operational proficiency without extensive background information. Operational training is conducted in conjunction with normal duty station work and is usually available at the duty station rather than at a special school. A third training category is Naval Reserve Training which can include either of the other two types of training. However, because of their unique situation, reservists are usually trained at separate facilities from fulltime Navy personnel.

REGIONAL CONTEXT

Relationship to Other Functions

The Navy's technical training facilities are designed to support the operating forces nationally and have little relationship to Shore Establishment Activities in the Bay Area. However, most commands offer operational training. The functional systems which utilize training facilities are shown on Table TA-1. Facilities Maintenance is the only functional system that provides support to training.

Relationship to Civilian Community

Continuing Education. The Navy and the civilian community take advantage of each other's resources in providing technical training to appropriate personnel. Navy employees often take continuing education classes at civilian institutions when the material being covered is related to Naval operations. By the same token, civilian personnel can participate in some Navy seminars or training programs if the material being covered is of mutual interest. For example, community fire departments use

Table TA-I: Relationship of Training to Other Functional Systems

<u>Functional Systems</u>	<u>Affected Activity</u>	<u>Type of Support Provided (P) or Received (R)</u>
Fleet Berthing	NAVSTA Treasure Island NAS Alameda NSC Oakland NAVSHIPYD Mare Island WPNSTA Concord	P - Ships' crews require training in fire fighting and damage control as well as in basic operations life line handling.
Aviation	NAS Moffett Field NAS Alameda	P - Pilot proficiency training ASW Aircraft maintenance Navy Reserve training.
Communications	NAVCOMSTA Stockton NAVSECGRUACT Skaggs Island	R - Technical training is offered at NAVSTA Mare Island and operational training is available at both Activities.
Ordnance	WPNSTA Concord	P - Personnel working with ordnance at WPNSTA Concord receive special training in handling these materials.
POL	NSC Oakland	R - Training in executing underway replenishment skills.
Facilities Maintenance	All	R - All training commands receive facilities maintenance services from their host commands
Health Care	NAVHOSP Oakland Disease Vector Control Center (NAS Alameda)	R - Training facilities for Doctors and other health care professionals

the Fire Fighting school at Naval Technical Training Center Treasure Island for proficiency practice.

Navy Reserve. Reservists are becoming an increasingly important part of Navy operations in the United States. Therefore reserve programs need to be located in major population centers having large groups of reservists, and must be easily accessible for people coming for training from remote places. The Bay Region is an excellent area for reserve training programs because it not only fulfills these criteria but also offers a broad variety of training opportunities since Navy operations here encompass all functional systems.

OPERATIONAL ELEMENTS

Chain of Command

Technical Training Schools. The two technical training schools in the Bay Area, located at NAVSTA Treasure Island and NAVSTA Mare Island, are in the Chief of Naval Technical Training (CINTECHTRA) chain of command. CINTECHTRA is under the cognizance of the Chief of Naval Education and Training (CNET) in Pensacola, Florida. The Pacific Fleet also sponsors both technical and operational training under the auspice of the Commander Training Command U.S. Pacific Fleet.

Operational Fleet Support Training. Operational Fleet Support Training involves specialized on-base training associated with the mission of an operating command, fleet readiness and individual proficiency. Training in this category includes on-the-job instruction in maintenance, operations, development, and safety. This type of training is offered as part of a command's normal operations and is included in its chain of command.

Reserve Training. The Navy Reserves has its own chain of command (NAVRESCOM), to handle all training functions. In the Bay Area the Naval Reserve Command Region 20 (COMNAVRESCOM 20) coordinates and administers all activities at the Region's six Naval reserve centers. Also under NAVRESCOM is the Naval Air Reserve Activity at NAS Alameda which coordinates and administers reserve aviation related training for the Marine Corps Air Group and six Naval Air Squadrons. The Marine Corps also have reserve training programs in the Bay Area. However, there is no local coordination of these equivalent to COMNAVRESCOM 20.

Bay Area Training Facilities

The Naval Technical Training School. The Naval Technical Training Center (NTTC), located at NAVSTA Teasure Island, has five schools. The five schools include: Fire Fighting School, Damage Control School, Hull Maintenance Technical Apprentice School, Underway Replenishment School, and Leadership Management Education Training (LMET). Courses and special training are offered for enlisted personnel and officers, and last from one day to about three months. NTTC programs include conventional academic classroom work as well as use of shop facilities and special simulators.

The Center's current Average on Board (AOB) attendance is about 600 students on a daily basis. Approximately 70 percent of these are transients receiving additional

training between moving from one command to another. The other 30 percent of the students come to take short-term classes and will return to their current command. Students come from all over the world to attend NTTC. In particular, people come to participate in the underway replenishment school, which is the only one of its kind in the U.S.

For this school, as well as the Hull Maintenance School and the Leadership Management Education Training, all students are assigned to the NTTC through the Naval Military Personnel Command. Students in the Fire Fighting School and some of the damage control programs come primarily from local Commands where enrollment arrangements are made directly between the Command and the Center. The Fire Fighting School is by far the largest school at NTTC in terms of students. This is because 70 percent of the crew on every ship must have received at least an introductory fire fighting class before the ship can go to sea.

Most of the facilities at NTTC are in old buildings (that are inadequate for training) dispersed around Treasure Island. There are five military construction (MILCON) projects, in various stages of approval, which will enable the center to replace its antiquated quarters and consolidate its activities in one area on the island. Two of these projects -- a new fire fighting school and relocation of the underway replenishment simulator from NCS Oakland to Treasure Island -- have both been approved and should be completed by 1987. When the new facilities are completed the AOB students the center can handle on a daily basis will be about 1,023. This represents an increase of about 70 percent.

Combat Systems Technical Schools Command. Located at the Mare Island Naval complex, the Combat Systems Technical Schools Command (COMBATSYSTECHSCOLCOM) is one of the most vital and important Naval technical maintenance training schools on the West Coast. The COMBATSYSTECHSCOLCOM has major school components and two tenant activities. They are: the Cryptographic Technical Maintenance School, the Surface Missile Systems School and the Tactical Data Systems School. Tenant activities at COMBATSYSTECHSCOLCOM include the Engineering Duty Officer School and the Naval Tactical Data Systems Development and Evaluation Center. The school trains students in the use of specialized advanced technical hardware for operationing, maintaining, and evaluating ship-based electronic tactical data and weapons sytems.

Like the NTTC, the COMBATSYSTECHSCOLCOM draws students from all over the world. The daily AOB number of students is about 1200-1300 with courses lasting from two to about eight months. Most courses offered at COMBATSYSTECHSCOLCOM are available at other Navy training commands. The cryptographic school is the only program unique to Mare Island.

Operational Fleet Support. Operational fleet support training is offered at most Bay Area Naval activities. Typical operational proficiency training involves air, land, and sea exercises and utilizes academic classrooms, simulators, and on-the-job experiences. Hands-on training makes use of small arms and gunnery target ranges, and is used to refine skills in such categories as explosive handling, air operations, shipboard operations, and cargo handling.

Operational training programs conducted at the various Naval Activities in the Bay Area are as follows:

- Naval Air Station Alameda
 - Naval and Marine Corps Air Reserve
 - Shore Intermediate Maintenance Activity
 - Aircraft Intermediate Maintenance
 - Organizational Effectiveness Center
- Naval Hospital Oakland
 - Medical Training
 - Advanced Medical Schools
- Naval Security Group Activity Skaggs Island
 - Cryptographic Maintenance
 - Data Processing and Software Development
- Naval Weapons Station Concord
 - Ordnance Cargo Handling School
 - Weapons Handling
 - Weapons Maintenance
 - Marine Corps Security Guard
- Naval Station Treasure Island
 - Naval and Marine Reserve Surface Forces Training Center
 - Naval Technical Training Center
- Naval Supply Center Oakland
 - Cargo Handling Training
 - Reserve AFT Shipboard Training
- Naval Air Station Moffett Field
 - Pilot Proficiency
 - ASW Aircraft Maintenance
 - Naval Air Reserve Training (ASW) Squadron
 - Aircraft Intermediate Maintenance
 - California Air National Guard
- Naval Communications Station Stockton
 - Communications Equipment Maintenance
- Naval Station Mare Island
 - Combat Systems Technical Schools
 - Engineering Duty Officer School
 - Small Arms Firing Range
- Oakland Army Base
 - Naval Transportation Management School

Navy and Marine Corps Reserve Training. Reservists receive extensive training during their annual two week Active Duty Training (ACTDUTRA) periods. During this time reservists normally work alongside active duty military or Navy Civil Service personnel in positions the reservist would occupy at time of mobilization. Reservists are also trained in courses that are created for, and attended by, active duty Navy personnel. Shorter duration training takes place during reserve unit drill weekends.

Categories of training that are accomplished by reservists include: mobile logistics support, surface combatant, aircraft, cargo handling, construction, Naval special warfare, intelligence, comptroller, supply, electronics, ship systems, ordnance, medical, facilities engineering, telecommunications, security, personnel, weather facilities and station support.

Navy and Marine Corps Reserve training activities are conducted at locations listed below and shown on Figure TA-1.

- Naval Air Reserve Activity, NAS Alameda
- Navy and Marine Corps and Reserve Center, City of Alameda
- Navy and Marine Corps and Reserve Center, City of San Bruno
- Navy and Marine Corps and Reserve Center, City of San Jose
- Navy Reserve Center, Naval Station Mare Island
- Navy and Marine Corps and Reserve Center, Naval Station Treasure Island
- Navy Reserve Center, Naval Communications Station Stockton

Training Planning

All training planning is done using a Master Course Reference File directive published by CNET annually which states projected training needs for the Navy by year and subject matter. Based on the document, the individual schools are told how much of the total training burden they will be expected to carry. The Master Course Reference File data projects enrollment figures for five years out from the current fiscal year, allowing the schools adequate lead time to increase staff and facilities when necessary. All facilities planning is done by the individual schools. Using enrollment projects, planners can apply the facilities planning formulas to calculate the allowable number of classrooms the school may require in the future. Special facilities like simulators or shops are not designed according to facilities manual specifications, but on a case by case basis. Once the initial design for a facility is completed, it will first be submitted to CINTECHTRA for approval. Training is only allocated a certain amount of the annual MILCON budget so it is necessary to determine which projects should be funded each year at the national level. Once the Training Command has approved the project, the school will then submit it to NAVFACENGCOM. If NAVFACENGCOM approves the project, it will be submitted to Congress as part of the MILCON budget.

When training requirements are going to be increased, the schools may need new staff as well as new facilities. It usually takes about three years to get staff increase requests approved because the requests usually have to go through Congress. However, training is a low priority for the Navy in terms of manpower allocations. Even when new facilities are being built to accommodate expanded training requirements, increased staff positions may not be available. Consequently the schools may make do with their existing crew by working nights and weekends. This is the situation at NTTC where a manpower review was conducted recently. The results of the review indicate that the NTTC will not be allocated any staff increase even though the school's teaching load will be increasing as new facilities are built.

Small Arms Training. One additional type of training important for security guards at Navy Activities is small arms proficiency. Other military units, including Construction Battalions, Marine guard units, and Marine Corps Reserve infantry units, also require weapons training with small arms. The only Navy owned small arms training range in the Bay Area is at NAVSTA Mare Island.



Figure TA-1
NAVAL/MARINE CORPS
RESERVE CENTERS



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

OPERATIONAL ANALYSIS

Existing Facilities

Technical Training Commands. The NTTC and the COMBATSYSTECHSCOLCOM have some out of date facilities that are or will soon be replaced using MILCON funds as they become available.

Fleet Support Operations Training. Overall, the fleet operations training facilities in the Bay Area are adequate to meet current training needs.

Navy Reserve Training. Some ships within the proposed fleet expansion program in the Bay Area will be manned almost exclusively by reservists. This necessitates providing training facilities that include the newest ships, aircraft and other equipment so that the reservists will be familiar with all operating systems. There is no problem accommodating reserve training on ships or at maintenance facilities working on ships or airplanes in the Bay Area, nor will there be in the future. However, aviation training may have to leave the Region because of constrained airspace in the Bay Area and the limited availability of NAS Alameda due to encroachment from the civilian community.

The Impact of the Fleet Expansion Program on Bay Area Training Facilities

The fleet expansion program will create an increased demand for training at all Navy schools across the country. Bay Area schools are already gearing up to meet this demand by upgrading their facilities and planning new courses. It is very difficult to gauge what the impact of the local homeporting increase will mean for local training commands. This will depend, to some degree, on what type of additional ships will be homeported in the Bay Area and how important training is to the Type Commands involved. However, it is certain that particular schools, like the Fire Fighting School, will probably not be able to meet the increased training demand. Even with the existing expansion plans the schools can only handle a finite number of students. Beyond that limit, students will have to go to other places on the West Coast for similar training. This could cause a problem for local commands who must bear the expense in terms of time and money to send their personnel to training programs.

Small Arms Proficiency Training

Since there is only one Navy owned small arms target range in the Region, personnel requiring proficiency training must travel long distances to find appropriate facilities. As with other types of training, this can be costly to local commands.

Training Facilities in the San Francisco Bay Area Compared to Other Regions

Although the training programs offered in the Bay Area are of excellent quality, they are limited in scope. There is a much more diverse set of training programs in San Diego so that Bay Area commands frequently have to send people south to attend certain programs. While this situation may be inconvenient, and sometimes expensive, it is not considered a major constraint to either current or future Naval operations in the Bay Area.

REGIONAL ISSUES AND OPTIONS

Issue 1: Technical training facilities in the Bay Area may not be able to accommodate the increased training requirements of additional ships to be homeported in the Bay Area.

Options:

- (a) Maintain status quo.
- (b) Send overflow students to schools outside of the region.
- (c) Give local students priority for enrollment in local classes.
- (d) Continue expanding training facilities and lobby Congress for additional manpower allocation for increasing school staffs.

Issue 2: There are insufficient small arms target ranges for proficiency training in the Region.

Options:

- (a) Maintain status quo.
- (b) Build another range.
- (c) Investigate interservice use of training facilities in the Bay Area.
- (d) Joint Naval-civilian police department use of small arms ranges should be studied as an alternative to construction of more Navy small arms facilities.

XI. REGIONAL COMMAND RELATIONS

OVERVIEW

This analysis is concerned with command relationships within the San Francisco Bay Area, one of the four Pacific Coast planning regions indentified by the Naval Facilities Engineering Command Instruction 11010.63B of 20 October 1983. The three other Regions are Puget Sound, Long Beach, and San Diego.

To avoid confusion, the reader of this analysis should keep in mind that "Regional," as used in the context of "Regional Command Relations" refers to the San Francisco Bay Region, while "Regional," as used below to describe the role of Commander Naval Base San Diego as "Regional Coordinator," includes Long Beach and San Diego, as well as the San Francisco Bay Region.

General Characteristics

The Navy Shore Establishment in the Bay Region encompasses 15 individual activities, defined as major components of the Shore Establishment with specific geographic identities and under the control of commanding officers. Most of these activities also support a variety of Naval and federal tenants. Figure RC-1, which diagrams the chains of command for each of these 15 activities, depicts a highly centralized, vertically organized structure. Were the chains of commands of the multitude of tenants of these activities to be included in this diagram, this picture of vertical organization would be reinforced. With few exceptions, commanding officers and officers-in-charge must go outside the Region to report to their immediate superiors in their respective chains of command.

Distinct and apart from the vertical command organization provided by the chain of command structure shown in Figure RC-1 is a horizontal coordination organization. This horizontal organization is based on the area coordination concept set forth in OPNAV Instruction 5400.24C of 15 October 1981. Area coordination follows a descending hierarchy of geographic areas, and subdivisions of these areas, each with its own designated coordinator with horizontal overview authority. The terminology used for these coordinators, in descending order, is Area, Regional, and Local.

Objectives

As described in OPNAV Instruction 5400.24C, the objectives of area coordination are:

- To provide a horizontal overview of shore activities and the relationships between such activities.
- To ensure an effective, integrated, and coordinated shore establishment to support the fleet, shore activities and personnel in the Naval service.

REGIONAL RELATIONSHIPS

Relationships to Other Functional Systems

By definition, Regional Command Relations encompasses all other functional systems within the Region in order to achieve the objective of an effective, integrated, and coordinated Shore Establishment within the Region. However, given that some of these functional systems have more of a regional orientation than others, Regional Command relations is especially closely related to fleet berthing, aviation, communications, and supply.

Relationships to Civilian Community

The functional system of Regional Command Relations is the focal point for contacts between the Naval Shore Establishment and the civilian community with whom it shares the San Francisco Bay Region. These contacts assume a variety of forms; primary among them are community and public relations, liaison with media, coordination with local government agencies, and joint civilian-military disaster preparedness planning.

OPERATIONAL ELEMENTS

Figure RC-2 diagrams the area coordination concept as it applies to the San Francisco Bay Region. Table RC-1 amplifies this diagram by providing data on substantive and geographic responsibilities. The following discussion covers the duties and responsibilities at each horizontal level of this coordination framework.

Area Coordinator

The Commander in Chief U.S. Pacific Fleet has been designated by the Chief of Naval Operations as the Area Coordinator for the geographic area which encompasses the San Francisco Bay Region. Table RC-1 lists the other areas under the area coordination jurisdiction of CINCPACFLT. OPNAVINST 5400.24C specifies the responsibilities of an area coordinator. Chief among them is the continuing appraisal of whole organizations and their functional and support interrelationships to each other, to the fleet and to personnel of the Naval service and to identification and necessary problem solving within the assigned area. As the coordinating authority, the area coordinator may compel consultation to seek agreement. He/she does not, however, have the authority to direct implementation. When area coordination matters cannot be resolved locally, they are referred to the Chief of Naval Operations. Specific responsibilities of the area coordinator, as listed in the previously cited OPNAVINST, include:

- Represents and acts for the Secretary of the Navy and the Chief of Naval Operations on such matters as may be assigned;
- Develops directives to reflect area coordination plans for the area assigned, including, as required, assignments of responsibility to shore activities, based on the technical and professional capability and mission of such shore activities;

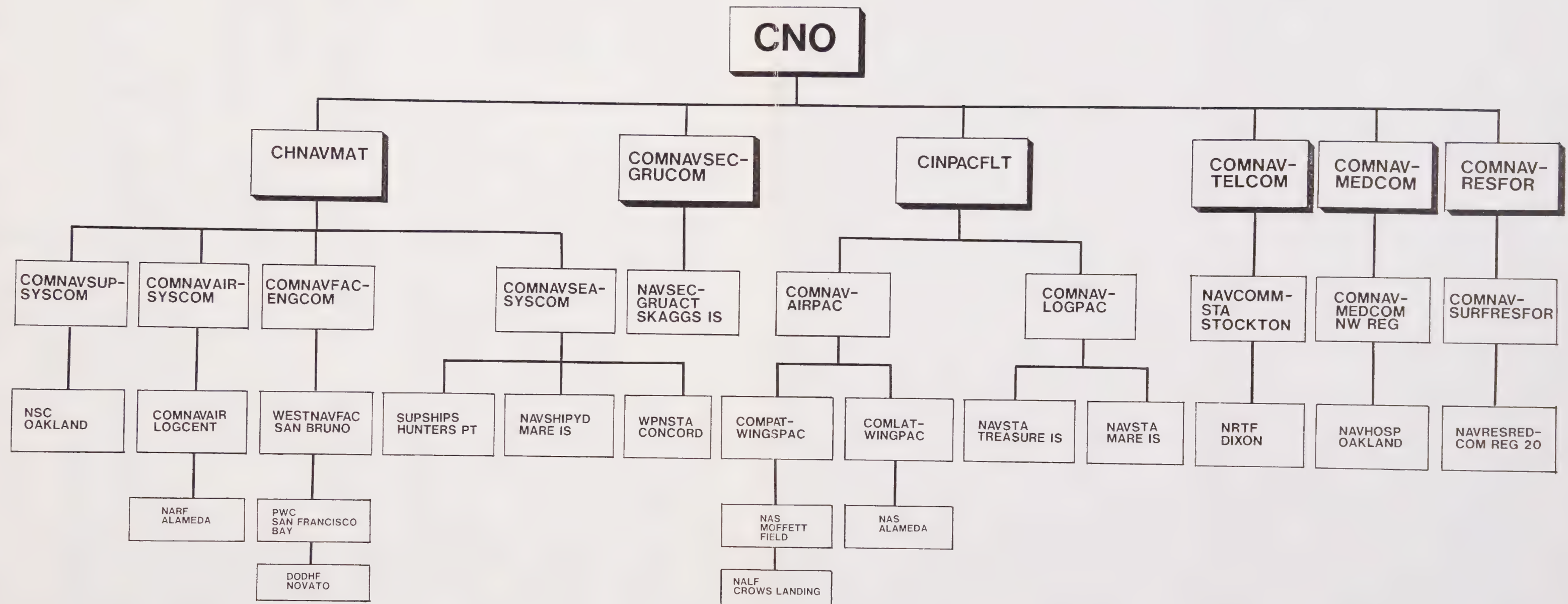
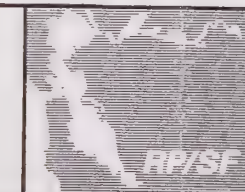


Figure RC-1
COMMAND ORGANIZATION OF THE BAY REGION SHORE ESTABLISHMENT
 (By Major Activity and Echelon)



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
 SAN FRANCISCO BAY AREA
 NAVAL SHORE ACTIVITIES**

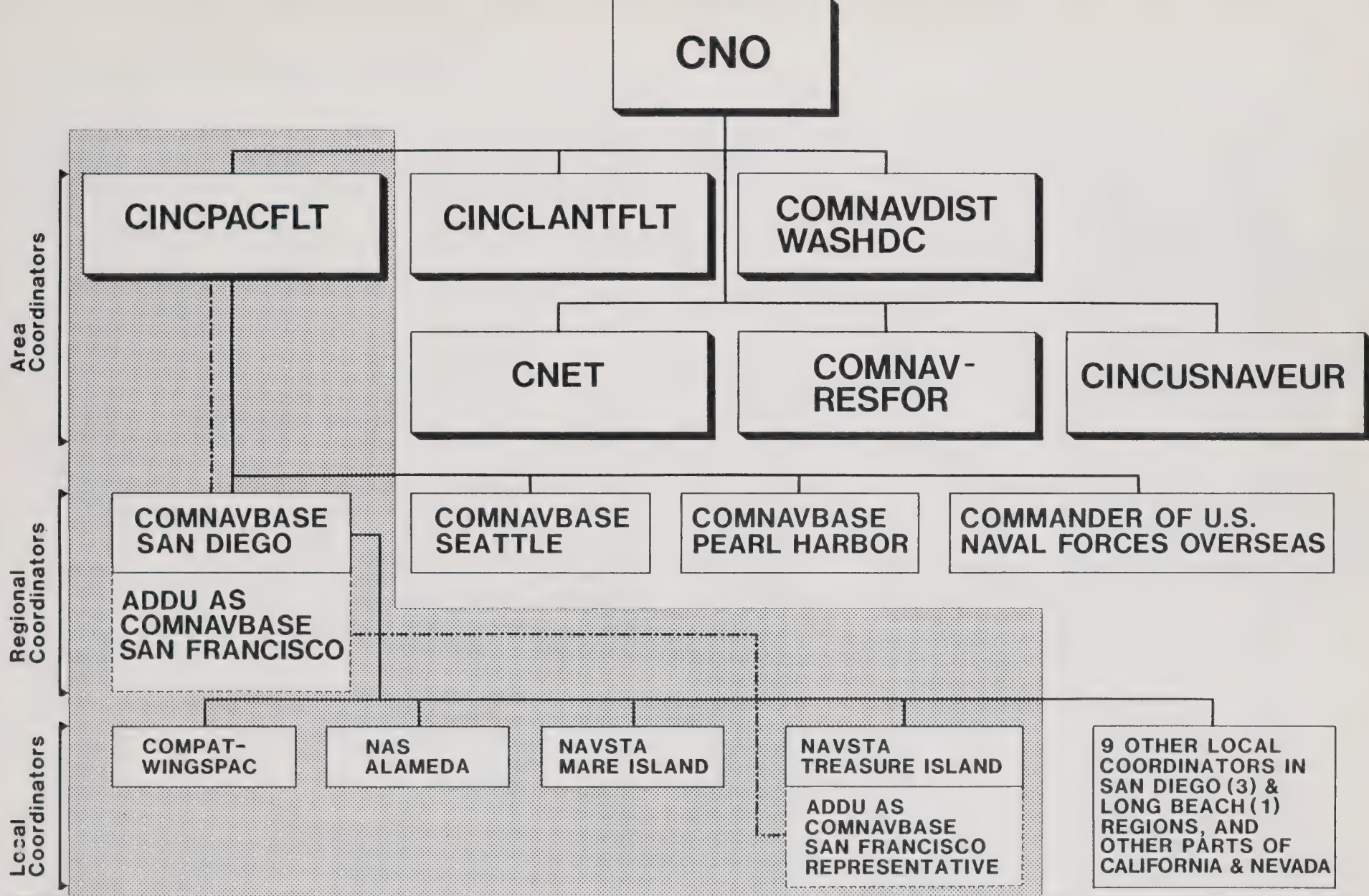


Figure RC-2

AREA COORDINATION ORGANIZATION OF THE SAN FRANCISCO BAY SHORE ESTABLISHMENT



Western Division - Naval Facilities Engineering Command

REGIONAL PLAN FOR SAN FRANCISCO BAY AREA NAVAL SHORE ACTIVITIES

Table RC-1: Echelon, Terminology, Responsibility, Designer and Geographic Jurisdiction of Area Coordination for San Francisco Bay Region

<u>Echelon</u>	<u>Term</u>	<u>Responsibility</u>	<u>Designee</u>	<u>Geographic Assignment</u>
1	Area Coordinator	A Flag Officer who exercises jurisdiction over major portions of CONUS and/or overseas areas.	Commander in Chief, U.S. Pacific Fleet	California, Nevada, Oregon, Washington, Alaska, Hawaii, Pacific overseas area
2	Regional Coordinator	Normally a Flag Officer who will exercise authority for a whole state or group of states, or whole country or group of countries for overseas areas.	Commander Naval Base, San Diego/San Francisco ¹	California and Nevada
3	Local Coordinator	A Commander or Commanding Officer who is assigned coordination authority for a geographical area within a region and who reports to and is under the direction of the cognizant Regional Coordinator.	Commander Patrol Wings U.S. Pacific Fleet	Santa Clara County
			Commanding Officer Naval Air Station Alameda	Contra Costa (less NWS Concord), Alameda, San Joaquin, Calaveras, Tuolumne, Alpine, Mono, Stanislaus, Merced, and Mariposa Counties
			Commanding Officer Naval Station Mare Island	Marin (less Sausalito area), Sonoma, Solano (plus NWS Concord), Sacramento, Amador, and all other California counties north of those cited above
			Commanding Officer Naval Station Treasure Island	San Francisco County (incl. Treasure Island and Yerba Buena), San Mateo County, and Sausalito area of Marin County

¹Upon mobilization, COMNAVBASE San Francisco is mobilized with an independent staff and Regional Coordinator responsibility for Northern California and Northern Nevada. COMNAVBASE San Diego/San Francisco has verbally tasked COMNAVBASEREP San Francisco with sub-regional coordinator responsibilities for Northern California.

- Directs the efforts of shore activities to ensure coordinated area support and services to the Operating Forces of the Navy, to shore activities, and to Naval personnel;
- Initiates actions to effect improvements and economies in Naval complexes, including consolidation of common services;
- Coordinates participation in negotiations and joint efforts with other military services, other Federal Government agencies, and state and local governments; and
- Submits concurrent fitness reports, where appropriate, on commanding officers of activities under their area coordination.

To assure the effective execution of the above responsibilities, they may be delegated by the Area Coordinator to Regional and Local Coordinators. CINCPACFLT, by Instruction 5400.12H of 23 June 1982, has delegated many of his area coordination responsibilities to eight regional coordinators, as described below.

Regional and Local Coordinators

Within his geographic assignment area, CINCPACFLT has designated eight Regional Coordinators, two of whom -- Commander Naval Base Seattle and Commander Naval Base San Diego -- encompass the entire West Coast Naval Shore Establishment. COMNAVBASE San Diego exercises jurisdiction as Regional Coordinator over that portion of the West Coast Naval Shore Establishment collectively defined by San Francisco Bay, San Pedro Bay (Long Beach), and San Diego Bay.

Therefore, as noted above, COMNAVBASE San Diego has area coordination jurisdiction over three of the four West Coast regional planning areas identified by Naval Facilities Engineering Command Instruction 11010.63B of 20 October 1983.

COMNAVBASE San Diego coordinates the provision of support to units of the Operating Forces of the Navy, to shore activities, and to personnel of the Naval service; exercises coordination and command of assigned shore activities in the states of California and Nevada; and performs such other duties as may be directed by the Commander in Chief, U.S. Pacific Fleet.

Within his Region, COMNAVBASE San Diego is supported by 13 Local Coordinators, four of whom are located within the San Francisco Bay Area. The four Local Coordinators are:

- Commander Patrol Wings U.S. Pacific Fleet,
- Commanding Officer Naval Air Station Alameda,
- Commanding Officer Naval Station Mare Island, and
- Commanding Officer Naval Station Treasure Island.

The specific geographic areas of responsibility of these four Local Coordinators are shown in Table RC-1.

As provided in CINCPACFLTINST 5400.12J of April 1984, Regional and Local Coordinators may compel consultation to seek agreement. If agreement cannot be reached at the local level, the issue will be forwarded to the cognizant Regional Coordinator. Resolution of local or regional issues will be sought by Regional

Coordinators in concert with immediate superiors in command of the activity(ies) concerned, before forwarding the matter to CINCPACFLT.

This instruction also provides that Local Coordinators, and the Regional Coordinator if a Local Coordinator is not assigned, shall submit concurrent fitness reports on commanding officers of activities and heads of branches or detachments of activities.

OPNAV Notice 54540 of 16 February 1977 provides for a Naval Base San Francisco, as well as a Naval Base San Diego. This notice additionally provides for Commander Naval Base San Diego to report to CINCPACFLT for additional duty (ADDU) as Commander Naval Base San Francisco. OPNAVINST 1000/2 of 5 October 1982 reflects the designation of Naval Base San Francisco as an active, fully operational command, which during peacetime is under the command, as an additional duty, of COMNAVBASE San Diego. This instruction additionally provides that during peacetime the Commanding Officer Naval Station Treasure Island is assigned ADDU as Chief of Staff to COMNAVBASE San Francisco. To carry out this Chief of Staff assignment, the Commanding Officer NAVSTA Treasure Island is designated as the COMNAVBASE San Francisco representative in the COMNAVBASE San Diego Organization Manual. This set of relationships is illustrated in Figure RC-2.

Upon mobilization, the duty of COMNAVBASE San Francisco is intended to pass to a reserve Flag Officer who would function as regional coordinator in Northern California and Northern Nevada.¹ Presently a small volunteer staff of Naval Reserve officers supports this Flag Officer. Until recently, the applicable CINCPACFLTINST 5400.12 made no mention of the position of COMNAVBASE San Francisco. Accordingly, regional coordination responsibilities would have remained with COMNAVBASE San Diego upon mobilization.²

In the Spring of 1984, this CINCPACFLTINST was modified in response to this problem. This instruction now provides that if the additional duty of COMNAVBASE San Francisco is assumed by another officer assigned this duty as his primary responsibility incident to mobilization and when specifically directed by CINCPACFLT, COMNAVBASE San Francisco shall assume Regional Coordination responsibility for Northern California and all counties of Nevada, except Clark County.

In his capacity as COMNAVBASE San Francisco Representative, the Commanding Officer of Naval Station Treasure Island has on a regular basis convened Waterfront Commanders Conferences to address problems associated with fleet berthing and related issues in the area. He also serves as Chairman of the Executive Committee which is overseeing preparation of the Regional Plan for the San Francisco Bay Area.

¹COMNAVBASE San Diego Ltr 5400 Ser N3/516 of 30 August 1983.

²Ibid.

ANALYSIS OF OPERATIONAL ELEMENTS

The Naval Shore Establishment within the San Francisco Bay Area defines a Region by accident of geography. But if the Shore Establishment hopes to identify common, Region-wide problems and develop and implement policies responsive to them, it must begin to develop Regional Command Relations which will allow it to truly operate in an effective, integrated, and coordinated manner within the spirit of OPNAVINST 5400.24C. The need for the Bay Region Shore Establishment to function in this manner has become more apparent as Regional issues have been identified during the current preparation of the Regional Plan.

The real estate assets and operational flexibility of the Naval Shore Establishment within the Region have been and will continue to be extremely vulnerable to encroachment pressures from the private sector and other federal agencies as the economy of the Region continues to grow. Adequate, affordable, and accessible housing is recognized by both the civilian and military communities as a major Regional problem. Likewise, the ability to freely and efficiently travel within the Region on its highway and road network has become a priority concern of its residents. In order to meet future operational requirements of the Fleet with inadequate financial resources, the Region's Naval Shore Establishment will be faced with difficult choices on how to spend what resources are allocated to it. These and other problems can be solved only if the Naval Shore Establishment within the Region exercises a Regional, unified approach to them. However, several major obstacles stand in the way of this happening.

First and foremost, the present application of the area coordination concept to the Region is problematic. At the lowest echelon of coordination, the authorities of the Local Coordinators are not commensurate with their responsibilities. Although they may compel consultation to seek agreement regarding a coordinated approach to Regional problems, they cannot direct anybody to take action. Submission of concurrent fitness reports by a Local Coordinator is also an ineffective tool for achieving Regional approaches to Regional problems by activities under his jurisdiction because of their punitive aspects and inability to operate on a real time basis. The only real tool available to Local Coordinators is moral suasion.

This problem of the mismatch of authority and responsibility extends to the level of Regional Coordinator, who is faced with the task of exercising a weak horizontal command structure against a strong vertical structure. It has been suggested that the concept of Regional Coordination under Naval base commanders be replaced by assigning the Type Commanders responsibilities in specific substantive areas. While this solution has some merit, it does not account for the fact that Regional Issues vary from Region to Region and the understanding which only comes from a local presence is essential to solving them.

The need for a local presence within the Region underscores another problem with the area coordination concept as it applies to the Bay Area. Currently, COMNAVBASE San Francisco, a Flag Officer, is physically located in San Diego. Although this Flag Officer is very ably represented by a captain physically located in the San Francisco Bay Area, local government officials and civilians in the Bay Area perceive that they are receiving less than equal attention because "their Admiral" is located in San Diego. This perception tends to lessen the effectiveness of the Navy in collectively presenting its point of view on Regional problems to Regional officials.

This situation also has implications within the Naval community of the Bay Area. It is an old Navy adage that there is no seniority among captains. Although this adage is less fact than fiction, it does point out that a captain, acting as the representative of a Regional Coordinator, does not have quite the same authority in dealing with the Region's three other Local Coordinators (one Admiral, two Captains) as would a Flag Officer.

Complicating the task faced by the COMNAVBASE San Francisco Representative are two other factors. One, this individual's primary responsibility is as Commanding Officer of Naval Station Treasure Island. Two, his responsibilities as COMNAVBASE San Francisco Representative are not totally reflected in the staff resources available to him.

The above discussion of Regional command relations has focused on the peacetime situation. Upon mobilization, the problems of Regional Coordination will assume a new dimension and new problems will arise. The current reference to COMNAVBASE San Francisco in CINCPACFLT's organic instruction on area coordination is confusing, vague and has led to the common perception of COMNAVBASE San Francisco as a "phantom command" with no discernible mission, function, or staff. This perception has impaired efforts to take preparatory steps necessary for the mobilization of this command.

REGIONAL ISSUES AND OPTIONS

Issue 1: Effective, integrated, and coordinated relationships among the components of the Bay Area Shore Establishment do not currently exist within the spirit of OPNAVINST 5400.24C.

Options:

- (a) Maintain status quo.
- (b) Centralize the local coordination function by designating COMNAVBASE San Francisco Representative as the sole Local Coordinator or as sub-regional coordinator for the Region.
- (c) Maintain the four existing Local Coordinators, but establish COMNAVBASE San Francisco as an independent command physically located within the Region.

Issue 2: The effectiveness of the Bay Area Naval Shore Establishment in representing itself to the civilian community is hampered because COMNAVBASE San Francisco is physically located in San Diego.

Options:

- (a) Maintain status quo.
- (b) Establish COMNAVBASE San Francisco as an independent command physically located in the Bay Area and under the command of an active duty Flag Officer.

Issue 3: Mobilization preparedness planning for COMNAVBASE San Francisco is impaired by this command's current perception as a "phantom command" without resources to adequately carryout its preparedness planning responsibilities.

Options:

- (a) Maintain status quo.
- (b) Revise the pertinent CINCPACFLT instruction to clearly specify the mobilization responsibilities of COMNAVBASE San Francisco and allocate adequate reserve officer resources for preparedness planning.

XII. FACILITIES MAINTENANCE

OVERVIEW

Objectives

The Facility Maintenance functional system includes upkeep and repair of Navy buildings and grounds, utility systems, transportation equipment, and family housing units.

These services are under the purview of an activity's public works department or, in the Central Bay Area, the Public Works Center San Francisco Bay Oakland. Key issues regarding facilities maintenance are the viability of the public works consolidation in the Central Bay Area and the efficiency of contracting with civilian firms for certain services.

REGIONAL CONTEXT

Relationship to Other Functions

The facilities maintenance supports virtually every other function by providing basic services that are not considered a direct part of most functions, but are critical for their continued operation. These functional relationships are shown on Table FM-1.

Relationship to the Civilian Community

The facilities maintenance function system has a very strong relationship with the civilian community because many maintenance services are purchased from civilian contractors. This situation not only creates both direct and indirect employment for civilians, but it also provides work for many local small businesses.

OPERATIONAL ELEMENTS

Public Works Center San Francisco Bay Oakland

Function. The Public Works Center San Francisco Bay Oakland (PWC SFRANBAY OAKLAND) was established in 1974 as a result of the Defense Retail Interservice Support (DRIS) program. Its purpose is to consolidate the individual public works departments at all Central Bay Activities into a single organization. This consolidation is intended to eliminate duplication of staff and facilities and to create cost efficiencies by achieving an economy of scale. The PWC is operated as a Navy Industrial Funded (NIF) command. Fees charged to customer commands cover the Center's costs including overhead. Consequently, PWC is self-reliant obviating the need for any appropriated funds.

Table FM-1: Relationship of Facilities Maintenance to Other Functional Systems

<u>Functional System</u>	<u>Affected Activities</u>	<u>Type of Support Provided (P) or Received</u>
Fleet Berthing	NAS Alameda NSC Oakland NAVSTA Treasure Island NAVSHIP YARD - Mare Island WPNSTA Concord	P - Utilities hook ups on piers for ships
Aviation	NAS Alameda NAS Moffett Field	P - Maintenance and repair of facilities
Communications	NAVCOMSTA Stockton NAVSECGRUACT Skaggs Island	P - Maintenance and repair of facilities
Ordinance	WPNSTA Concord	P - Maintenance and repair of facilities
Supply	NSC Oakland	R Procurement of building materials and other supplies
POL	NSC Oakland, Point Molate fuel depot	P - Maintenance and repair of facilities
Training	NAVSTA Treasure Island NAVSTA Mare Island	P - Maintenance and repair of facilities
Health Care	NAUHOSP Oakland	P - Maintenance and repair of facilities
Housing	Oakland Army Base NSC Oakland NAS ALameda Point Molate Fuel Depot NAVSTA Treasure Island NAVHOSP Oakland WESTNAVFACENGCOM DODHF Novato	P - Maintenance and repair
Personnel Support	NSC Oakland NAS Alameda NAVSTA Treasure Island DODHF, Novato NAVCOMSEGCRUACT Skaggs Island NAVSTA Mare Island WPNSTA Concord NAVCOMSTA Stockton NAS Moffett Field	P - Maintenance and repair of facilities

Organization. PWC SFRANBAY OAKLAND is in the NAVFACENGCOM chain of command. The commanding officer reports directly to the commanding officer at WESTNAVFACENGCOM in San Bruno. Administrative headquarters are located at the Oakland Army base, but most of PWC's maintenance facilities are based at shops or other facilities at its customer Commands.

Thirteen activities in the Central Bay area contract with PWC for basic services. These include:

- Department of Defense Housing Facility Novato (DODHF),
- Naval Supply Center Fuel Depot Point Molate,
- Naval Station Treasure Island,
- Coast Guard Group, Yerba Buena Island,
- Oakland Army Base Oakland,
- Naval Supply Center Oakland,
- Naval Supply Center Alameda Facility,
- Naval Supply Center, Alameda Annex,
- Coast Guard Base Government Island,
- Naval Hospital Oakland,
- Western Division Naval Facilities Engineering Command San Bruno,
- Naval Shipyard Hunters Point, and
- Naval Air Station Alameda,

Each customer activity has a Staff Civil Engineer (SCE) or some other individual designated as a liaison to PWC, who coordinates all facilities maintenance functions. Certain services like, such as collection and utilities, are purchased on an ongoing basis by the Activity. Some of these services, i.g., grounds maintenance, are performed by civilian contractors. These contractors are hired and managed by PWC, who then bills its clients for these services. Major maintenance and other projects not done routinely are scheduled by the SCE (or his equivalent) according to his priorities and available funding. To help the SCE make better informed maintenance decisions, PWC performs regular facilities inspections and publishes the results monthly.

Another important role of the PWC is the ownership and operation of all Navy owned family housing located at customer command activities. This includes running a central Family Housing Office which performs the assignment and referral functions for Navy families, as well as conducting the Family Housing Survey for the Central Bay Activities. More information about PWC's housing responsibilities are included in the Housing Functional System Analysis.

PWC has recently been assigned responsibility for construction management and inspection for all new construction and major maintenance projects being performed by civilian contractors at certain military activities. PWC provides this service for its regular customer activities, as well as for NAS Moffett Field, WPNSTA Concord, and Travis Air Force Base (Fairfield, California).

Facilities Maintenance at all Other Activities

Activities Not Served by PWC SFRANBAY OAKLAND. Within the San Francisco Bay Region there are five activities not served by the PWC. These include: the Mare Island Naval complex, NAVSECGRUACT Skaggs Island, NAVCOMMSTA Stockton, and NAS Moffett Field, and WPNSTA Concord.

Each of these activities has its own public works department and Public Works Officer. These departments provide the same services as the PWC but on a smaller scale.

Hunters Point. The Navy currently occupies one building at Hunters Point. This building is under the PWC's purview. However, most maintenance jobs are so small that it is more cost effective to hire a civilian contractor than to send a PWC crew to complete the necessary work. The remainder of the facility is under lease to the Triple "A" Machine Shop Inc. The terms of the lease specify that the lessee may either pay rent in cash or in approved capital improvements to the physical plant of Hunters Point. Triple "A" has always opted to perform the capital improvements.

Commercial Activity Studies

In 1976 the Office of Management and Budget promulgated regulations directing the armed forces to conduct commercial activity (CA) studies. These studies determine whether selected components of facilities maintenance could be performed on a more cost effective basis by federal employees or by independent contractors. COMNAVMAT is responsible for scheduling the CA studies for the Navy. Every year COMNAVMAT, in conjunction with NAVFACENGCOM, decides which functions will be studied Navy-wide. Each activity is then responsible for conducting its own study of that function.

The activity will develop a performance work statement describing all tasks currently completed in conjunction with the function under study. The performance work statement is converted into a contract document and bids are solicited from civilian contractors. Concurrently, the activity will calculate its own cost to perform the same function. The activity's cost is compared against the price of the contractors' bids. This cost analysis is presented to the CNO who decides whether it is more cost effective for the activity to perform the function in-house or contract it out. If the activity retains the function, the costs will be audited at the end of the first year to see if they are in line with the projected costs. This audit process is then repeated every five years. If circumstances change so that a civilian contract is no longer cost effective, the activity can negotiate with the CNO for a "new start." This means the activity would terminate a civilian contract and perform the function in-house.

While CAs are generally conducted on a function by function basis, NAVFAC has experimented with developing a single maintenance contract for an entire activity so that all functions are carried out by an independent contractor. The system has only been used at one activity, a Naval base in Memphis Tennessee, and is not likely to put into effect in the Bay Area.

OPERATIONAL ANALYSIS

Public Works Center San Francisco Bay Oakland

Since PWC SFRAN BAY OAKLAND has been in existence for ten years, there is a sufficient record on which to evaluate its performance. Studies of the center's effectiveness indicate that it has produced cost savings. Some would argue, however, that these savings have been off-set, to some unquantified degree, by a loss

of efficiency, flexibility and responsiveness to the individual maintenance needs of the customer activities. Some of these trade-offs are an expected result of consolidation. The situation in the Bay Area is complicated by the Region's size and congested highway conditions at rush hour.

Answering the question of whether a centralized or decentralized facilities maintenance system would best serve the Navy shore establishment of the Bay Region is very difficult. A study would be required to determine not only the cost of running individual public works departments at each activity currently served by the PWC, but also the start up costs of initiating this program. Such a study has recently been undertaken by NAVFACENGCOM on the East Coast, but the results are not yet available. The final decision either in favor of or against consolidation will involve making trade-offs between financial savings and the quality of maintenance services. This is, in reality, a policy question rather than a planning issue.

Commercial Activity Studies

The CA studies were initiated to cut down on the costs of facilities maintenance. From a "bottom line" prospective these studies have had mixed results in the Bay Area. For example, the refuse collection contract at NAS Alameda has become very expensive and the next time it is reviewed PWC staffs expect to recommend a new start. On the other hand, the housing maintenance function was recently contracted out and, so far, its working very well. Response time to maintenance requests are down and the quality of the work is up.

But even with the cost advantages of the civilian contracts, there are disadvantages that may in the long run be significant. The biggest drawback is that the activity (or the PWC) loses the expertise and familiarity its staff has had with facility systems. The contractors rarely build up such expertise because contracts do not seem to be renewed very often. There are several possible reasons for this. One possibility is that when the contract is put out to bid every thirty-six months, new companies under-bid the existing contractor just to get the work. Another possibility is that contracts are awarded to new firms as a way to spread out federal work among more private businesses.

Labor relations problems with contractors could potentially cause problems. For example, contractors at the Naval Base in Tennessee were struck by their employees. Consequently there was no one to operate the base and the national guard had to be called in. Another example is that the contractors' employees may be difficult to contact in case of a national emergency.

Another factor that must be considered in evaluating civilian contracts is that they require an expanded staff at the activity to handle contract administration. At PWC there were about nine people handling contracts in October of 1983. Now there are almost 70 people required for contract administration. This does not include the increased staff necessary to handle the additional paper work. The data tracking system at PWC required a \$100,000 up grade to handle all the new input.

A final issue related to the CA study system that is particularly important in this Region is the method used for calculating labor costs for the Navy and for the contractors. The Navy estimates its labor costs to complete a function based on a formula that sets wages at an average prevailing rate for a comparable civilian job. When the contractor estimates labor costs, he/she can use a minimum wage rate set by the Department of Labor. In a place like the Bay Area where prevailing wage

rates are very high, the Navy is required to use higher rates than the civilian bidder. Therefore the civilians contractors can almost always under-bid the Navy.

Hunters Point

There are two problems with the lease arrangement at Hunters Point. One, the leasee maintains the piers at a workable level, but he does not keep them up to Navy standards. Two, even though the leasee pays the rent by executing approved capital improvements, the amount of work he is required to do is not enough to maintain the entire facility. This has resulted in considerable deferred maintenance. Thus it would be very costly to re-activate this facility and bring it up to Navy facilities standards.

Potential Changes in the Existing Facilities Maintenance System

North Bay Public Works Center. Some consideration has been given to creating another consolidated public works center in the North Bay. This center would be based at NAVSHIPYD Mare Island's Public Works Department and would serve the Mare Island Naval complex, NAVSECGRUACT Skaggs Island, and WPNSTA Concord. A preliminary evaluation of this plan by the PWC suggests that it is infeasible. Both NAVSHIPYD Mare Island and WPNSTA Concord require quicker response times for maintenance requests than a consolidated public works center could realistically provide.

Joint Interservice Resource Study Groups. As part of the DRIS program DOD has established Joint Interservice Resource Study Groups (JIRSGs) to consider whether certain functions could be consolidated regionally for all branches of the military. For example, instead of having separate refuse collection systems for Army and Navy activities in the Bay Area, it may be more cost effective to have a single system that services and activities. Each year the local JIRSG group will study different functions to determine whether consolidation would be beneficial. In 1983 a JIRSG study of the facilities maintenance in the Bay Area was conducted. The results of this study show that there is currently no need for additional consolidation of this function because the PWC SFRAN BAY Oakland already serves the Region efficiently. However, future studies of facilities maintenance related functions may provide different conclusions resulting in more consolidation.

REGIONAL ISSUES AND OPTIONS

Issue 1: Is it more efficient to continue centralizing the facilities maintenance function or would decentralization actually be more efficient?

Options:

- (a) Maintain status quo.
- (b) Maintain the Public Works Center at its current geographic scope of responsibility, but conduct studies to determine additional level of resources required for it to more effectively perform according to customer expectations.
- (c) Study re-establishing public works departments at each activity.

- (d) Decrease the number of activities served by PWC to only those in the East Bay (NSC Oakland, NAS Alameda, NAVHOSP Oakland).

Issue 2: The trend towards increased use of civilian contractors to perform maintenance functions is diminishing the Navy's self-sufficiency while intending to achieve major cost savings.

Options:

- (a) Maintain the status quo.
 - (b) Continue with CA studies and contracting with civilians putting financial savings as a priority over self sufficiency.
 - (c) Find other ways to cut costs while retaining a fully trained public works staff at each activity.
-

XIII. GROUND ACCESS

OVERVIEW

The ground access functional analysis is organized into five parts. The first part establishes the operational elements at the regional level, highlighting the institutional organization, regional transportation constraints perceived by the planning authorities, and the regional travel corridors, including major highway and transit facilities.

The second part provides a characterization of travel demand to support the overall mission of the Naval Shore Establishment. This includes the identification of the functional linkages among the separate Navy activities, an analysis of the civilian travel demand to support Naval activities, and a discussion of the localized site accessibility issues for the activities.

Part three analyzes constraints to the travel demand patterns identified in the previous part. Highway accessibility constraints include a look at peak hour travel commute problems and a comparison of the constraints on the various bridges and tunnels that are critical to the functional linkages serving the Navy mission. The public transit accessibility constraints include a comparison of the time, distance, number of transfers required, and costs for existing public transit services for each of the functional links identified. A discussion of the localized access constraints identifies an important gap in available information critical to the on-going assessment of ground access.

The fourth part identifies the major plans and programs for improvements to the regional transportation network that are of consequence to the functional integration of the Naval Shore Establishment. The concluding part identifies regional ground access issues and outlines preliminary options for their resolution.

OPERATIONAL ELEMENTS

Organization

There are several public and private institutions in the Region that interact with and affect transportation. These institutions may be categorized as transportation operators and transportation planners. The former category includes a variety of agencies.

Highways are planned and constructed by the California Department of Transportation (CALTRANS) and many public works departments of city and county governments. CALTRANS also provides commuter rail service between San Francisco and San Jose, operated under contract by the Southern Pacific Transportation Company. In San Francisco, transit is provided by the San Francisco Municipal Railway (MUNI), operating under the direction of the City's Public Utilities Commission. Elsewhere, special transit districts provide service, as in the counties of Santa Clara (SCCTD), San Mateo (SAMTRANS), Alameda and Contra Costa (AC Transit); others are the Bay

Area Rapid Transit District (BARTD) and the Golden Gate Bridge, Highway and Transportation District (GGBHTD). In 1980 a new joint powers authority, the Central Contra Costa Transit Authority (CCCTA), was formed to provide service in a 200 square mile area of its county. The major airport terminal facilities are publicly owned and operated by cities and counties.

Bay Region marine terminals are planned and constructed at the project level by public and private institutions. Six publicly utilized ports are located in the region, along with several military terminals and a variety of proprietary marine terminal facilities.

The Metropolitan Transportation Commission is the regional transportation planning entity and it has established guidelines for determining the extent of its concern with transportation issues. These guidelines are used to determine which transportation facilities and programs are of regional significance and should be included in the Regional Transportation Plan (RTP), and which transportation proposals and decisions should be reviewed by the Commission in the administration of the RTP. These guidelines are summarized as:

- **Regional Function** - A regional transportation interest applies to an existing or proposed transportation facility or service that is a necessary element in a unified and coordinated regional transportation system.
- **Significant Financial Impact** - A regional interest may result when the magnitude of a transportation project's financing could have an impact on the funding of other projects and the allocation of resources to other jurisdictions in the region. In general, a regional interest is established when MTC has an assigned role in project review and fund allocation under federal and state laws and applicable regulations governing financial aid to transportation.
- **Major Community or Environmental Impact** - Regional interest is involved when a program or project has significant impact on the society, the environment, the community, and land development that is of more than local concern.
- **Legislative and Regulatory Impact** - In accordance with legislative mandate (Government Code Section 66512), the regional interest includes active advocacy -- recommendations for appropriate legislation to secure needed financing, or taking a position in the regional interest when proposed legislation or proposed rules and regulations at the state and federal levels affect the financing, organization, or operation of regional transportation.

Transportation Constraints

Measured against the transportation systems in other metropolitan regions in the United States, the system in the Bay Region is well developed and mature. There is a long history of transit in the older cities along the Bay, where presently extensive networks of transit lines serve the cities of San Francisco and Oakland and neighboring communities. Nevertheless, though a large part of the needed structure of transit and highways is in place, the Region and the Metropolitan Transportation Commission continue to deal with planning and development related to important concerns and unmet needs.

The most important transportation constraints currently facing the Bay Area include energy availability, air quality, transit and highway financing, and the special needs

of elderly, handicapped, and low-income persons. According to the current MTC Transportation Plan for the region:

- o Current state and federal funding sources are inadequate to maintain and enhance the existing transportation system. MTC recommended in 1980 that transit fares be raised to provide immediate financing, and they were, but the long-range outlook remains bleak. Highway and transit capital needs far outstrip the anticipated financial resources.
- o In recent years, federal regulations required transit operators to make their equipment fully accessible to persons in wheelchairs and to evaluate policies and procedures that affect accessibility. MTC prepared a transition plan documenting how the region's transit operators expected to comply with the regulations.
- o The Bay Area is a non-attainment area of federal air quality standards for Ozone and Carbon Monoxide. The region's air quality plan is currently being updated.
- o The increased price and decreased availability of fuel have had two effects on transit operators: operating expenses have increased significantly due to increases in diesel fuel prices and patronage increased significantly, causing overcrowding during peak periods on most transit systems.

Regional Transportation Corridors

Twelve regional transportation corridors have been identified within the Bay Region by the Metropolitan Transportation Commission. They are illustrated in Figure GA-1. The transportation facilities that have been put into place to create these major corridors include primarily the regional highway network, illustrated in Figure GA-2, and the regional transit network, illustrated in Figure GA-3. Rail access to the Naval facilities in the region have been excluded from the ground accessibility analysis because of its limited significance to Naval operations.

Regional Highway Network. The Bay Area is served by a large network of federal, state and county highways that run primarily along a north-south axis. Five bridges span the Bay providing important links between the San Francisco peninsula, the North Bay, and the East Bay. Three of the four major east-west highways cross bridges (Interstate 80, Highway 92, and Highway 84).

Most new housing in the Bay Area has been built on the region's periphery while jobs have remained concentrated in the urban core. This development pattern has resulted in long trans-regional commutes for many people. Consequently, there are tremendous traffic bottle-necks at the approaches to the region's major employment centers. Unfortunately, these problems are getting worse. The Route 101 corridor from San Francisco to Santa Clara at the p.m. peak hour has about 490,000 total trips in motion. Metropolitan Transportation Commission staff estimate that when all the potential land in this area is developed there will be a 27 percent increase over the existing peak hour traffic. On the San Francisco Bay Bridge, the situation is also acute. The bridge is now operating at vehicle capacity during both the morning and evening rush hour periods. Commuters have an average wait of 20-30 minutes at the toll plaza in the morning and a similar wait on the San Francisco side in the evening.



Source: Metropolitan Transportation Commission

Figure GA-1
REGIONAL
TRANSPORTATION
CORRIDORS



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

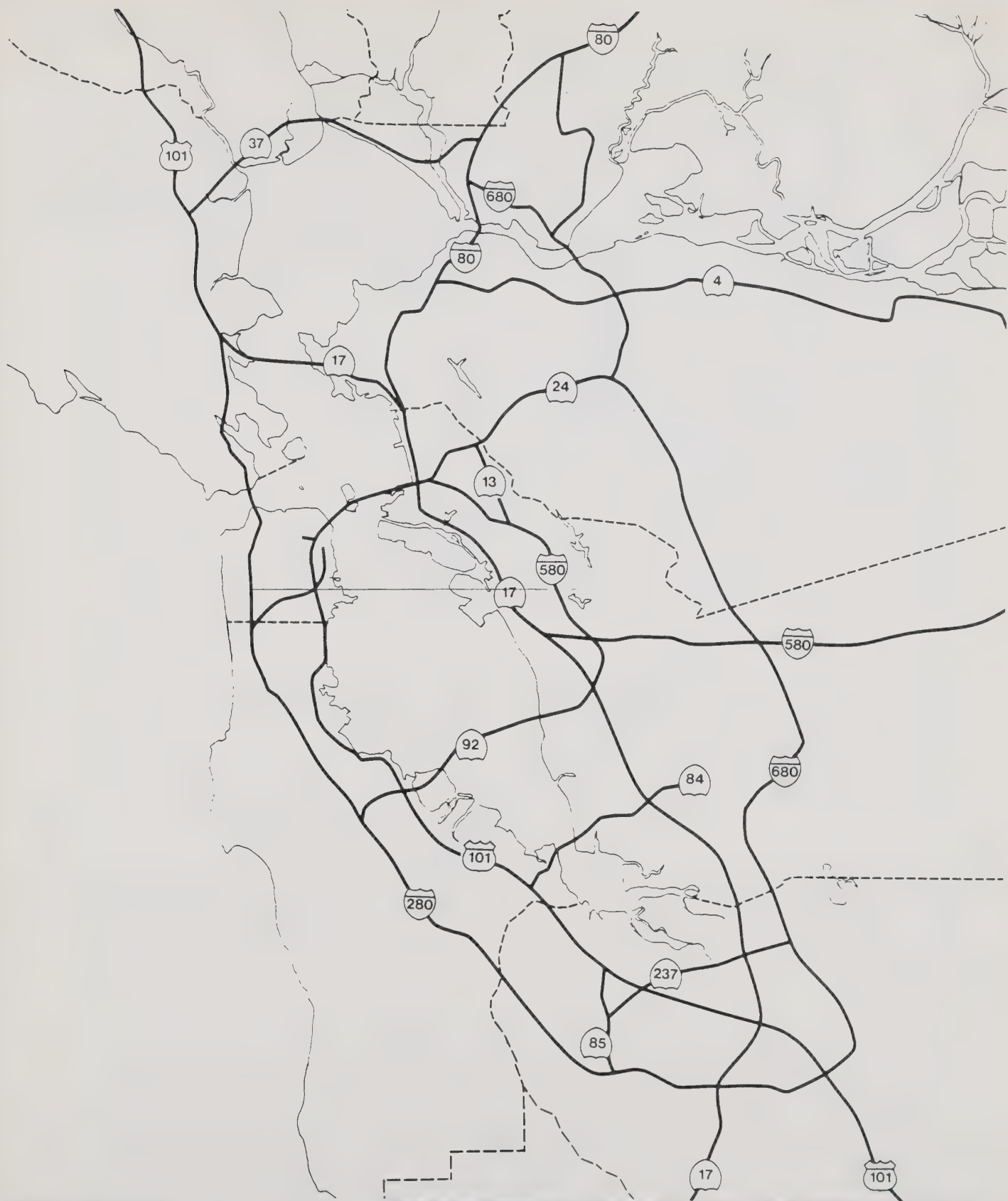


Figure GA-2
REGIONAL
HIGHWAY
NETWORK



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

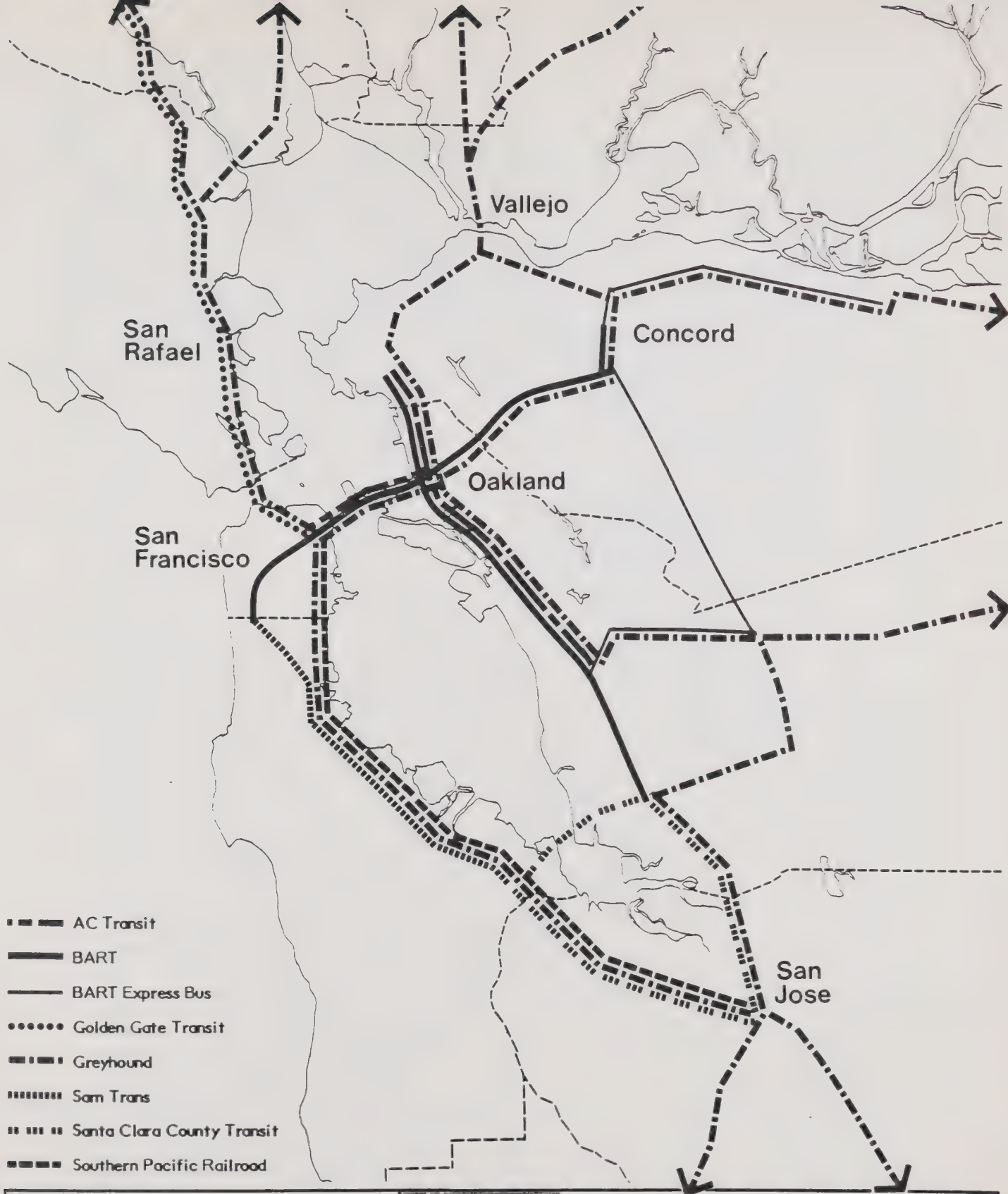


Figure GA-3
REGIONAL
TRANSIT
NETWORK



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

These locations are only two examples of the highway congestion problems that exist for people who travel to one of the region's major employment centers every day. Navy personnel are as subject to extreme delays in arriving at work due to traffic congestion as most Bay Area workers. In fact, their problems may be worse. Most Navy personnel are not able to find housing near their duty stations. Consequently, they are forced to face long transbay commutes and traffic jams. Civilian personnel working at Naval facilities have the same problem, which is further exacerbated by the fact that most Naval facilities are not adequately served by public transit.

Further congestion on the Bay Bridge will occur when additional ships are homeported at Treasure Island. Currently, 1,700 Treasure Island bound vehicles use the Bay Bridge daily. The CALTRANS estimates that by 1990 this number will grow about two-and-one-half times to 5,850. This net increase of 4,150 vehicles is equivalent to about the capacity of one Bay Bridge traffic lane. Since the Bridge is already at capacity, this increase represents a very serious problem for both the State and the Navy. The possibilities for increasing the Bridge's capacity are not feasible, and Caltrans has urged the Navy to develop an intensive program to promote increased vehicle occupancy through ride sharing, vanpools, better bus service, etc. Along with the staggering impact in terms of time delay for people going both to Treasure Island and San Francisco, increased traffic congestion will also cause additional fuel consumption, further air pollution problems, and increased accident potential, as well as greater problems with worker tardiness and absenteeism.

Besides Treasure Island, other Naval activities affected by traffic congestion are NAS Moffett Field and DODHF. Moffett Field has the worst problems since many of its personnel, both Navy and civilian, live in the East Bay and are forced to drive through two or three serious traffic bottlenecks each day. DODHF has a traffic problem in that it is very far away from all potential duty stations so that residents must face at least one very long bottleneck along Route 101, and potentially others, depending on their destination. Also, Mare Island has considerable traffic and parking congestion around the Shipyard.

Public Transit. Public transit routes in the Bay Area are set up primarily to serve commuters going into the major downtown areas. Routes for intra-city travel are better in the more built-up areas like San Francisco, Berkeley, and Oakland. But in the outlying areas of Contra Costa, Solano, Napa, and Sonoma Counties, there are very few local lines.

For Navy personnel, public transit is not very useful. Long commute times and many transfers are commonly involved in going from one activity to another, though limited improvements could significantly increase transit service capability. Even civilian employees who want to commute to work by public transit are limited in their alternatives. Most activities are not directly served by bus lines or, if they are, the service is very limited. For example, there is a bus that goes from WPNSTA Concord to BART, but it leaves only three times in the morning and three times in the afternoon. There is an upcoming need for more transit service to Treasure Island, particularly from the East Bay. If people have serious trouble getting to work because the traffic is too bad and there are no public transit alternatives, the Navy could experience serious and ongoing problems with worker absenteeism and low morale.

ANALYSIS OF OPERATIONAL ELEMENTS

Regional Trip Patterns Connecting Naval Activities

The Naval activities which comprise the Shore Establishment are widely dispersed throughout the entire Bay Region. The locations of these activities are shown superimposed on the regional highway network in Figure GA-4. Two of the locations, Crows Landing and Rough and Ready Island, do not appear because of their distance from San Francisco Bay. Some separate activities are shown combined at a single location because of their physical proximity in the regional network.

Trip Function. The transportation interrelationship or links among these activities can be characterized in terms of the other functional systems analyzed in this Report. These systems, and their identifying codes as used in this analysis, are listed below:

<u>Code</u>	<u>Function</u>
COM	Communications
FB	Fleet Berthing
TR	Training
FM	Facility Maintenance
SP	Supply
RC	Regional Command
POL	Petroleum, Oil and Lubricants Operations
OR	Ordnance
HC	Health Care
HS	Housing
PS	Personnel Support

Not all of these functions appear as ground access linkages among all activities. Thus, they can be used to categorize trips among various Naval activities by function.

Trip Origins and Destinations. Regional trip patterns among Naval activities can also be characterized by the direction of travel. This characterization, along with trip function, is shown in Table GA-1. Each of the seventeen Naval activities are included on both axes of an origin-destination matrix. A code within any of the matrix cells indicates a transportation link occurs either as a trip origin or a trip destination. The code within the cell establishes the functional nature of the trip.

As can be seen in the origin-destination table, some of the activities are more highly interconnected. The Naval Supply Center and the Naval Hospital Oakland, for example, are directly connected to every other activity.

Trip Generation Characteristics. While no specific data are available to quantify comprehensively the trip generation characteristics for the various functional links, a review of the activity profiles and trip purposes has been made in order to provide a relative ranking of the number of trips, frequency of trips and time period of travel. This characterization is shown in Table GA-2.

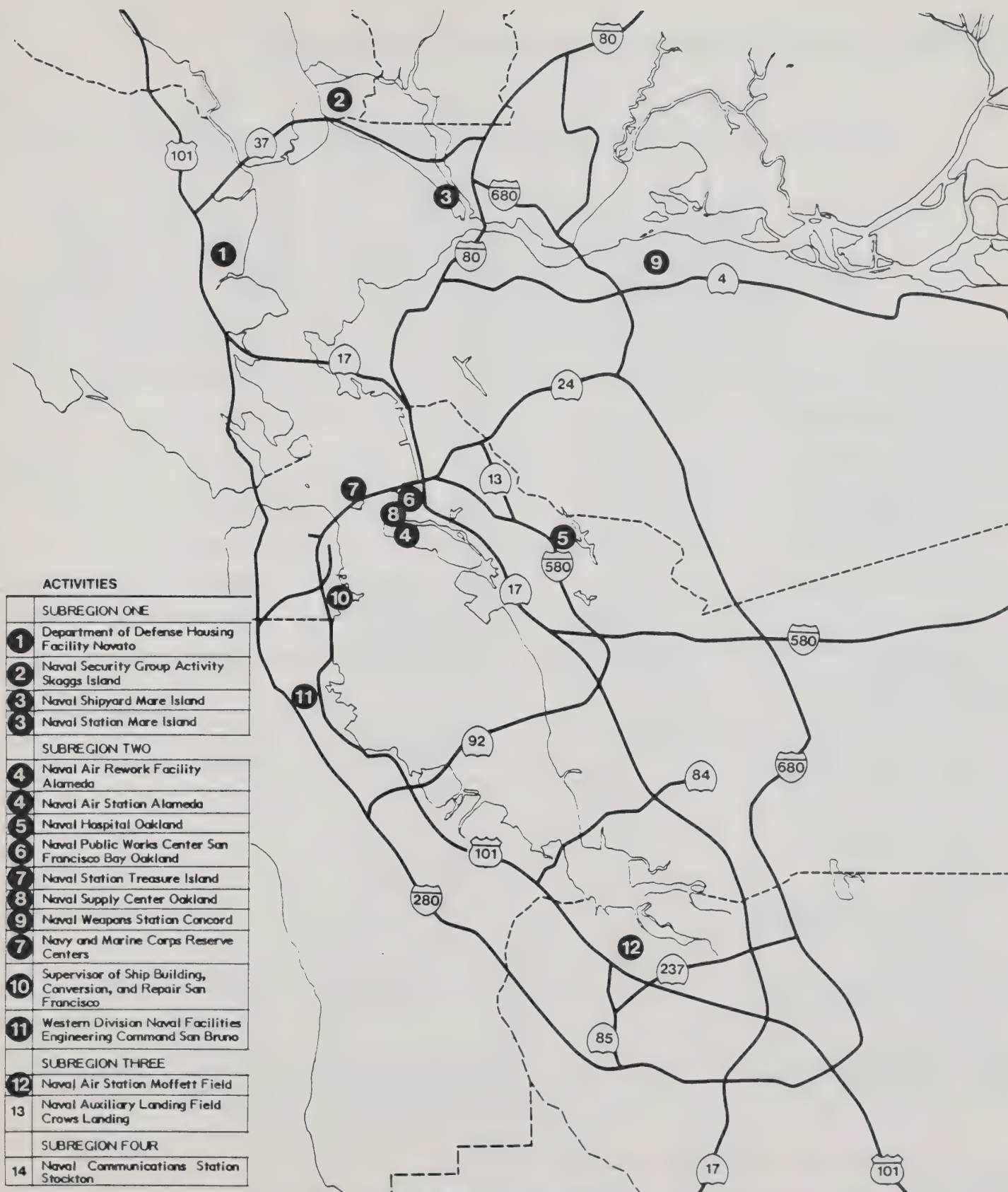


Figure GA-4
PROXIMITY OF
NAVAL ACTIVITIES
TO HIGHWAYS



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

Table GA-1

REGIONAL TRIP PATTERNS AMONG NAVAL ACTIVITIES

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		Department of Defense Housing Facility Novato														Naval Security Group Activity Skaggs Island				Naval Shipyard Mare Island				Naval Station Mare Island				Naval Air Rework Facility Alameda				Naval Air Station Alameda				Naval Hospital Oakland				Naval Public Works Center San Francisco Bay Oakland				Naval Station Treasure Island				Naval Supply Center Oakland				Naval Weapons Station Concord				Navy and Marine Corps Reserve Centers				Supervisor of Ship Building, Conversion, and Repair San Francisco				Western Division Naval Facilities Engineering Command San Bruno				Naval Air Station Moffett Field				Naval Auxiliary Landing Field Crows Landing				Naval Communications Station Stockton																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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FUNCTION CODE

COM Communications
 TR Training
 FM Facilities Maintenance
 SP Supply

RC Regional Command
 OR Ordnance
 HC Health Care
 HS Housing
 PS Personnel Support



Potential Increase in Functional Link



Major Functional Link

Table GA-2: Trip Generation Characteristics of Functional Ground Access Linkages

<u>Code</u>	<u>Functional Link</u>	<u>Relative Number of Trips</u>	<u>Frequency of Trips</u>	<u>Trip Period</u>
COM	Communications	Low	Intermittant	Off Peak Hr.
TR	Training	Low	Intermittant	Peak Hr.
FM	Facilities Maintenance	Moderate	Daily/Weekly	Peak Hr./Day Long
SP	Supply	Moderate	Daily	Off Peak Hr.
RC	Regional Command	Low	Intermittant	Off Peak Hr.
OR	Ordnance	Low	Weekly	Off Peak Hr.
HC	Health Care	Moderate	Daily	All Day
HS	Housing	High	Daily	Peak Hr.
PS	Personnel Support	Moderate	Weekly	Off Peak Hr.

Source: SCA

The number of trips is ranked as low, moderate, or high, depending on the trip purpose. The frequency of trips is characterized as intermittent, daily, or weekly. The trip period distinguishes among peak hour, off peak, and day long.

The home based work trip (HS) is the most significant functional link among Naval activities in terms of the number of trips and the frequency. It is also subject to delays associated with peak hour traffic congestion in the regional network.

Functionally, the home based work trip (HS) for Naval personnel can be subdivided into two components: 1) those who are housed at Naval or DOD facilities, and 2) those who must find housing in the community. A determination of the total number of person trips can be made from the Shore Establishment personnel loading profiles. Table GA-3 provides a list of Naval activities which provide family or unaccompanied housing. Shown in bold face are those activities which are both major work place destinations for Naval personnel and have Naval or DOD housing facilities. While no precise information is readily available to determine how many of the home based work trips (HS) stay within an individual Naval facility, estimates have been made on the basis of conversations with appropriate housing managers.

The number of home based work personal trips allocated to the regional circulation network has been estimated for each of the activity destinations. These estimates are shown in Table GA-4. As is shown in Table GA-4, approximately 56% of the potential home based work trips (HS) remain at the facility of origin and do not utilize the regional transportation network. The remaining 44%, together with home-based-work trips by Navy personnel not provided Navy housing, must utilize the regional network to commute daily to work. Those that originate at Navy housing sites account for approximately 2,290 person trips. They may use autos, public transit, military vans, or informal carpools to make that trip.

The primary destination for these trips, according to Navy housing managers, is the Naval Air Station at Alameda. By far, the most trips originate at Department of Defense Housing Facility Novato, perhaps as many as half. Naval Station Treasure Island, however, houses a significant portion, giving rise to a "reverse commute" on the Bay Bridge not subject to peak hour traffic constraints. Trips originating at the Public Works Center can utilize local streets to get to Naval Air Station Alameda but will have to use the Alameda Tube. Other significant trip patterns involve commutes from Navy housing at Mare Island and Concord.

Regional Trip Patterns by Civilian Personnel

The primary functional ground access link for civilian personnel is the home based work trip to each of the major civilian employment destinations. Table GA-5 shows the 1983 base personnel loading for civilians for each of the activities. This table includes only personnel defined as "permanent party" by the activity profiles.

All of the home base work personal trips are allocated to the regional network and will result in a commute pattern similar to other home based work commutes in the Bay Area. Assuming that civilian employment with the Navy will have to be competitive with other work opportunities in the Region, time/distance trade-offs will be made by civilians working for the Navy that generally correspond to average regional trip patterns.

Table GA-3: Estimated Out-Commuting Patterns of Naval Activities with Naval Housing, 1984

	NAVY HOUSING UNITS			ESTIMATED % OF UNITS WHICH COMMUTE OUT ²		
		UPH Units			UPH Units	
	Family Units	Officer	Enlisted	Family Units	Officer	Enlisted
SUBREGION ONE						
Department of Defense Housing Facility Novato	1,197	0	0	100%	-	-
Naval Security Group Activity Skaggs Island	83	0	99	0	-	0
Naval Station and Naval Shipyard Mare Island	865	42	1,489	25	0	2
SUBREGION TWO						
Naval Air Station Alameda	1,213	149	1,634	15	30	0
Naval Hospital Oakland	81	0	347	5	-	0
Naval Public Works Center San Francisco Bay, Oakland	112 ³	0	0	98	-	-
Naval Station Treasure Island	811	360	3,299	60	65	5
Naval Supply Center Oakland	3	0	0	0	-	-
Naval Weapons Station Concord	115	0	158	75	-	0
Western Division Naval Facilities Engineering Command San Bruno	2	0	0	0	-	-
SUBREGION THREE						
Naval Air Station Moffett Field	658	176	1,392	1	-	-
Naval Communications Station Stockton	43	9	111	1	30	0
Total	5,183	736	8,529			

Notes: ¹ Includes both adequate and substandard units.

² Estimated by SCA from telephone conversations with Family housing UOPH, and UEPH managers.

³ Navy personnel living in quarters on the Oakland Army Base in proximity with the PWC.

Table GA-4: Naval Personnel Home Based Work Trips Allocation

<u>Destination</u>	<u>Within Facility</u>		<u>Allocated to Regional Network</u>	
	<u>Percent of Total</u>	<u>Number</u>	<u>Percent of Total</u>	<u>Number</u>
SUBREGION ONE				
Department of Defense Housing Facility Navato	0	0	100	1,197
Naval Security Group Activity Skaggs Island	100	182	0	0
Naval Station Mare Island	90	2,150	10	246
SUBREGION TWO				
Naval Air Station Alameda	92	2,769	8	227
Naval Hospital Oakland	99	42	1	4
Naval Public Works Center				
San Francisco Bay Oakland	2	2	98	110
Naval Station Treasure Island	80	3,584	20	886
Naval Supply Center Oakland	100	3	0	0
Naval Weapons Station Concord	69	187	31	86
Western Division Naval Facilities Engineering Command San Bruno	100	2	0	0
SUBREGION THREE				
Naval Air Station Moffett Field	99	651	1	7
SUBREGION FOUR				
Naval Communications Station Stockton	98	160	2	3
		2,893		2,290

Table GA-5: Shore Establishment Civilian Personnel Loading by Activity for 1983

DESTINATION

SUBREGION ONE

Department of Defense Housing Facility Novato	167
Naval Security Group Activity Skaggs Island	45
Naval Shipyard Mare Island	10,563
Naval Station Mare Island	545

SUBREGION TWO

Naval Air Station Alameda	6,566
Naval Hospital Oakland	791
Naval Public Works Center San Francisco Bay Oakland	1,206
Naval Reserve Readiness Command Region Twenty	35
Naval Station Treasure Island	372
Naval Supply Center Oakland	3,742
Naval Weapons Station Concord	1,146
Supervisor of Ship Building Conversion and Repair, San Francisco	402
Western Division Naval Facilities Engineering Command San Bruno	644

SUBREGION THREE

Naval Air Station Moffett Field	1,607
Naval Auxiliary Landing Field Crows Landing	12

SUBREGION FOUR

Naval Communications Station Stockton	910
Total	28,753

Notes: 1. This table includes only personnel defined as "permanent party" by the Activity Profiles.

Source: Activity Profiles prepared by DW-EP/D, ECA Architects, and SCA.

Vehicular Access Capacity Constraints

Figure GA-5 superimposes the Navy ground access functional links previously identified on the existing regional highway network, identifying the locations of significant peak hour congestion. As can be seen from the figure, the existing functional network incorporates much of the Bay Region though it is generally concentrated on the east side of the Bay.

The characterization of congestion is a measure monitored by The California Department of Transportation and described in an annually updated report.¹ The purpose of the highway travel time inventory is to identify locations of recurrent traffic congestion and to document the magnitude of this congestion. Since the inventory is intended to primarily reflect "stop-and-go" conditions instead of just minor slowdowns, congestion for this purpose is defined as a condition where the average speed drops below 40 mph for 15 minutes or more on a typical weekday. Congestion on major holiday weekends, special events or due to accidents are not normally included in the inventory. The 1982 results show an increase of 16% over the preceding year in the total delay in vehicle hours throughout the Region.

The locations with greatest congestion include Route 101 in Santa Clara County. Other locations with significant congestion are: eastbound Alameda County Route I-80 approaching the San Francisco-Oakland Bay Bridge toll plaza, southbound Santa Clara County Route I-280 between Rowland Boulevard and Ranchitos Road, eastbound Alameda County Route 24 between Route I-580 and the Caldecott Tunnel, and eastbound San Francisco County routes I-80 and I-280 combined approaches to the San Francisco-Oakland Bay Bridge. All but one of these segments in the Region are within the Navy functional linkage network.

Peak Hour Traffic Constraints for Navy Functional Links. Table GA-6 identifies all the functional linkages among Navy activities which occur during the peak hour commute period on Bay Area regional freeways. Not all of these linkages correspond to freeway segments in which peak hour congestion has been identified. Table GA-6 also identifies which of the peak hour directional linkages are subject to peak hour constraints. They are primarily the home based work trips from the Novato DODHF and from the Naval Station Mare Island, and the facilities maintenance trips originating at the Naval Public Works Center.

The congested freeway segments affecting functional linkages in the Navy ground access network are shown graphically in Figure GA-6. These segments include:

- San Francisco-Oakland Bay Bridge Corridor;
- Interstate 80 between the Bay Bridge toll plaza and Richmond; and
- Highway 101 in north Marin from the San Rafael Bridge to Novato.

Naval Personnel Travel Time Characteristics for the Home Based Work Trip. Current housing policy for the Navy provides that housing should be available within a one-hour, one way daily commute. The major employment centers in the Navy Shore Establishment are located at Mare Island and in the Alameda Island complex. No detailed time/distance data are available for Mare Island, but existing time/

¹ CALTRANS, Highway Operations Branch District 4, 1982 Traffic Performance of Bay Area Freeway System. June 6, 1983

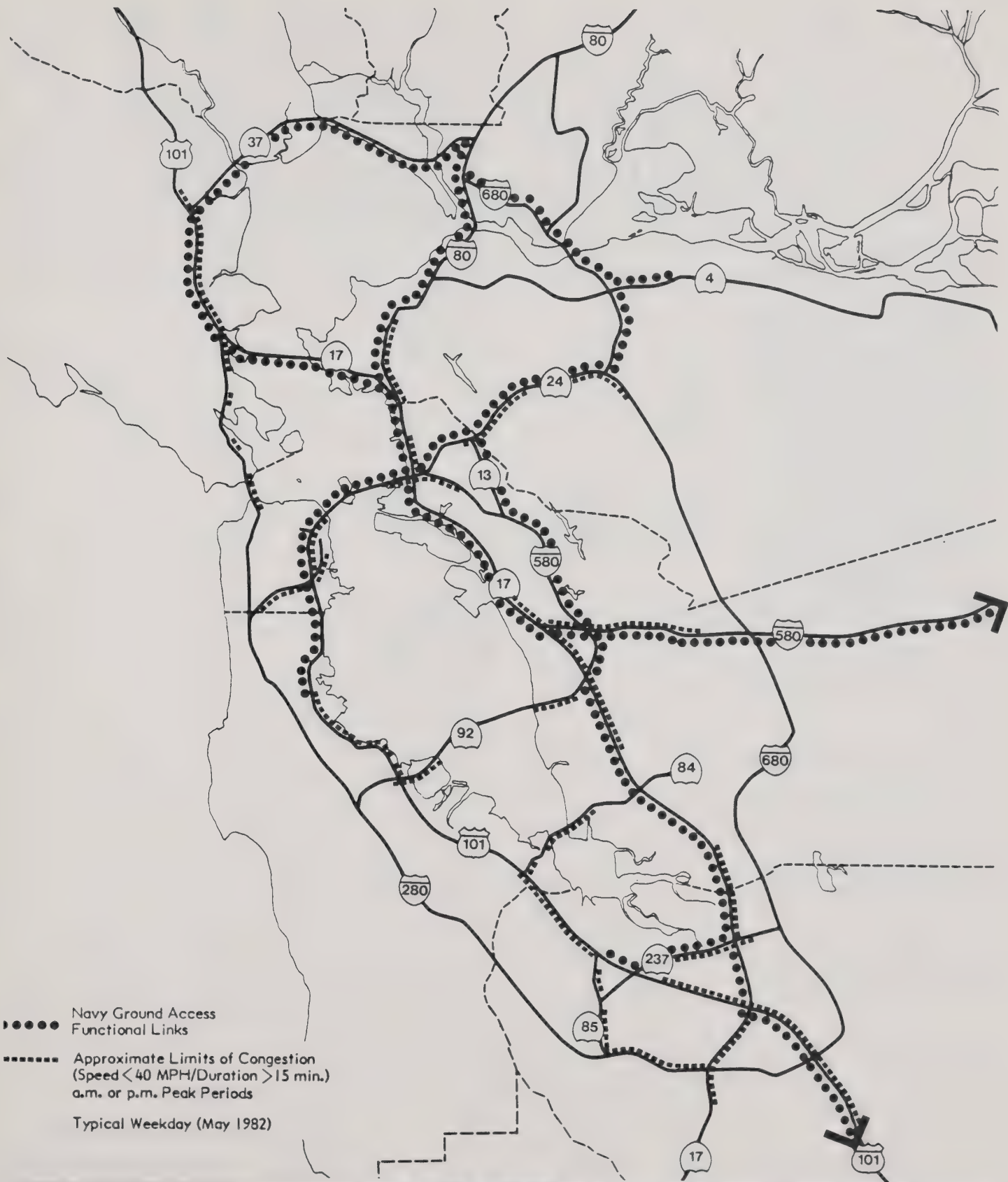


Figure GA-5
IMPACT OF HIGHWAY
CONGESTION ON
GROUND ACCESS



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

Table GA-6

NAVAL ACTIVITIES SUBJECT TO MAJOR PEAK HOUR TRAFFIC DELAYS

DESTINATION		SUBREGION ONE				SUBREGION TWO											SUBREGION THREE			SUBREGION FOUR	
		1	2	3	3	4	4	5	6	7	8	9	7	10	11	12	13	14			
	SUBREGION ONE																				
1	Department of Defense Housing Facility Novato								FM												
2	Naval Security Group Activity Skaggs Island	HS			HS																
3	Naval Shipyard Mare Island	HS																			
3	Naval Station Mare Island	HS																			
	SUBREGION TWO																				
4	Naval Air Rework Facility Alameda	HS			HS				FM												
4	Naval Air Station Alameda	HS			HS				FM												
5	Naval Hospital Oakland																				
6	Naval Public Works Center San Francisco Bay Oakland																				
7	Naval Station Treasure Island	HS			HS		HS		FM												
8	Naval Supply Center Oakland	HS					HS		FM	HS											
9	Naval Weapons Station Concord				HS																
7	Navy and Marine Corps Reserve Centers																				
10	Supervisor of Ship Building, Conversion, and Repair San Francisco								FM												
11	Western Division Naval Facilities Engineering Command San Bruno								FM												
	SUBREGION THREE																				
12	Naval Air Station Moffett Field																				
13	Naval Auxiliary Landing Field Crows Landing																				
	SUBREGION FOUR																				
14	Naval Communications Station Stockton																				

FUNCTION CODE

COM Communications
 TR Training
 FM Facilities Maintenance
 SP Supply

RC Regional Command
 OR Ordnance
 HC Health Care
 HS Housing
 PS Personnel Support

HS/FM



Peak Hour Linkages
 Subject to Major Peak
 Hour Traffic Delays

Source: Sedway Cooke Associates

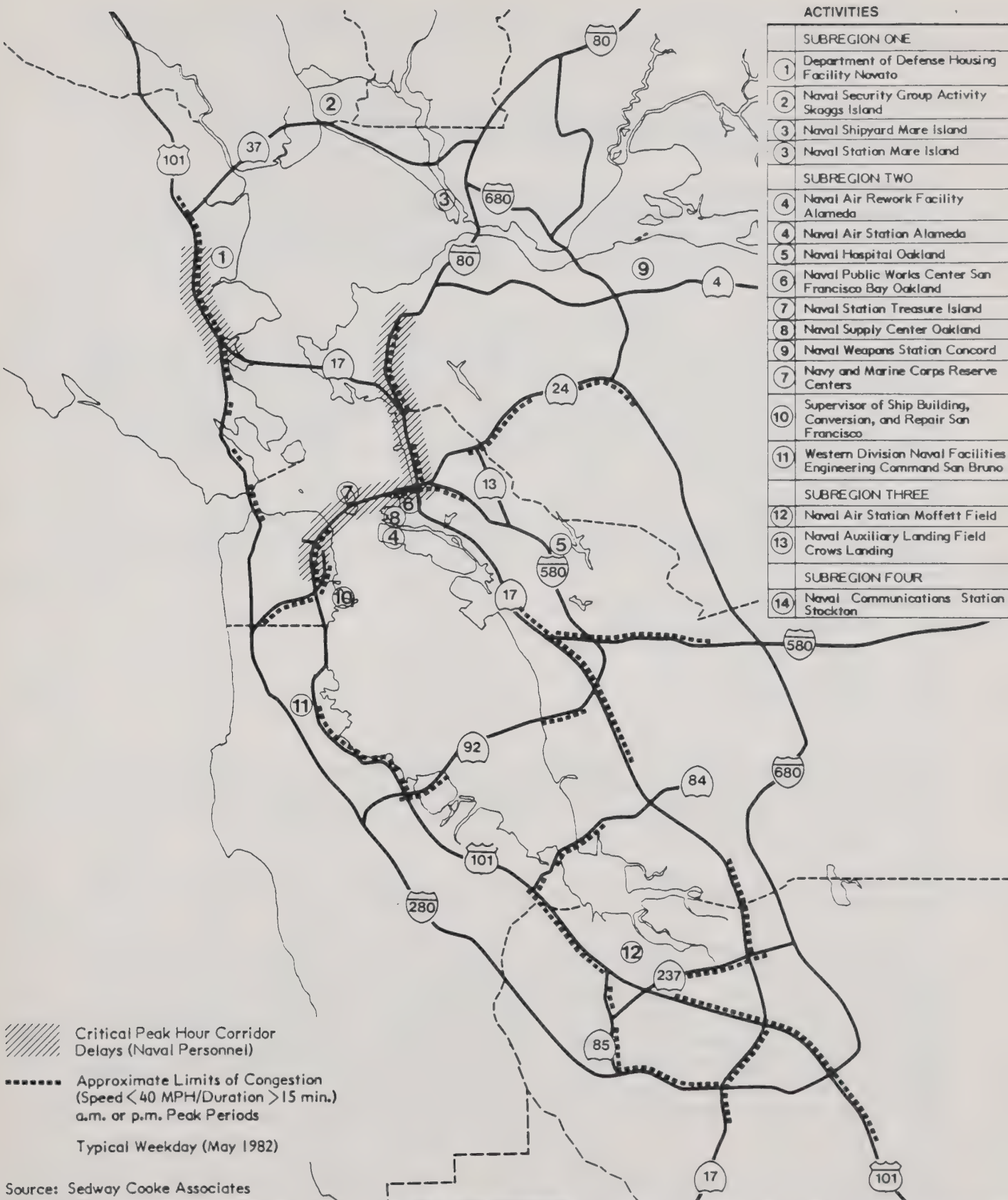


Figure GA-6
HIGHWAY CONGESTION
AND NAVAL ACTIVITIES
LOCATIONS



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

distance data have been collected for NAS Alameda, Oakland Army Base, Treasure Island, Naval Hospital Oakland, and DODHF. These are based on an assumed peak hour trip and are shown in Table GA-7.

Using the Naval Air Station at Alameda as the centroid, commute sheds can be drawn illustrating equal time distances. These are shown in Figure GA-7 for a 15 minute, 30 minute, and 40 minute peak hour commute.

Civilian Home Based Work Trips. The locus of trips generated in the civilian sector by each of the Navy employment centers have not been specifically determined. However, average trip lengths and average travel times were estimated by MTC in a model utilizing 37 "superdistrict" zones to include commute travel patterns in the entire Bay Area.

Average trip lengths for each of 37 "superdistricts" in the Bay Region were estimated for the year 1975. Increasing congestion can be expected to have increased the travel time, but aggregate travel distances will have remained fairly constant. By identifying each of the civilian employment centers among the Navy activities within a "superdistrict" zone, it is possible to estimate the average home based work person trip in terms of travel distance and travel time. These estimates are shown in Table GA-8.

Bridges and Tunnels. Integral to the regional circulation network are the many bridges and tunnels required to tie together the Bay Area. The critical connections in the Navy Functional Network include:

- San Francisco-Oakland Bay Bridge
- San Rafael-Richmond Bridge
- Carquinez Straits Bridge
- Caldecott Tunnel
- Alameda Tube
- Mare Island Causeway

Of these connections, the San Francisco Oakland Bay Bridge, the Alameda Tube and the Carquinez Straits Bridge are all operating at or above capacity during the peak hour commute. See Figure GA-8. (See Appendix A for a definition of the level of service capacity measures, V/C ratio.)

Alternative routes are possible for each of these links but they would all entail substantial additional time delays were these links to be interrupted.

The San Francisco-Oakland Bay Bridge is of special regional concern since increased traffic is expected to be generated by anticipated growth in the San Francisco downtown office core. Since, however, the Bridge is already operating at capacity, it is not expected that the Bridge will carry significantly more cars during the peak commute hours. Instead, the peak hour is expected to continue to increase in duration (from the present two hours + to a three hour peak period by the year 2000.¹ Additionally, an increase in average vehicle occupancy is expected as commuters adjust travel habits to the permanently congested corridor. This will

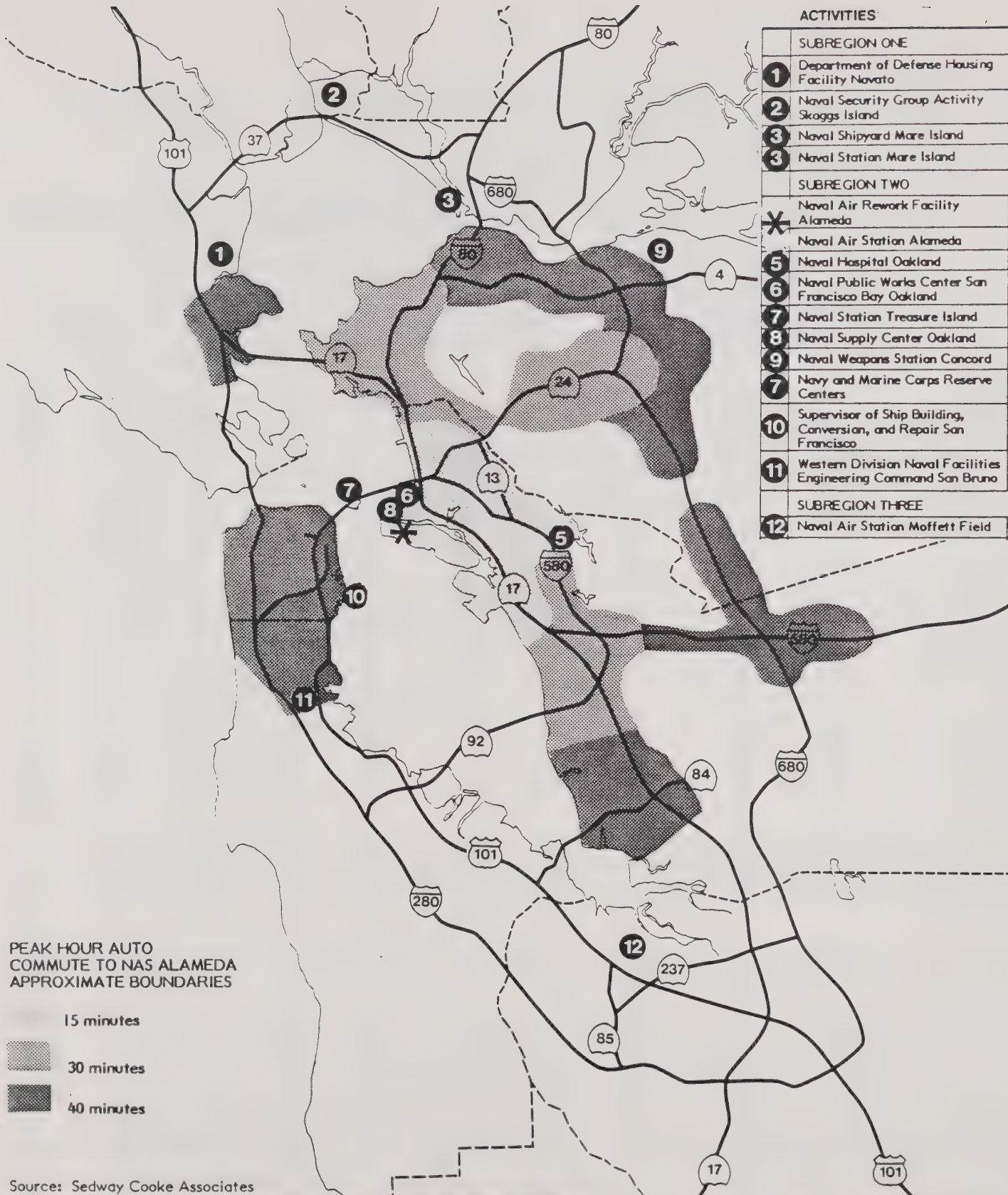
¹Metropolitan Transportation Commission, I-280 Transfer Concept Program: Phase I Report (no date).

Table GA-7: Time/Distance Chart - Peak Hour Commute Period

The 32 locations listed below are considered to be within the allowable commuting distance from PWC serviced installations indicated during normal commuting hours.

Location	NAS Alameda		Oakland Army Base		Treasure Island		Naval Hosp. Oakland		DODHF NOVATO	
	Miles	Min	Miles	Min	Miles	Min	Miles	Min	Miles	Min
Albany	13	21	6	12	13	22	20	32	21	31
Berkeley	11	18	4	9	11	18	18	29	23	35
Castro Valley	17	27	18	28	25	38	12	20	43	60
Clayton/Concord	25	38	20	32	27	40	32	48	43	60
Danville	28	42	24	36	30	46	35	52	45	60
Dublin	24	36	29	44	36	52	15	24	54	71
El Cerrito	11	18	8	14	15	25	22	34	18	28
Fremont	26	40	28	42	35	52	14	22	53	70
Hamilton Facility	32	48	25	38	32	48	39	55	0	0
Hayward	16	26	18	28	25	38	8	15	43	57
Livermore	33	49	34	51	41	58	28	42	59	80
Martinez	23	35	20	32	27	41	34	50	40	57
Milpitas	35	50	34	54	41	59	20	31	59	82
Newark	36	40	28	43	35	51	14	24	53	74
Orinda	16	26	10	18	15	24	10	17	33	48
Pittsburg	32	48	29	44	36	52	40	58	40	58
Pleasant Hill	18	28	16	25	23	35	28	42	41	59
Pleasanton	28	42	26	38	33	48	20	31	51	70
Richmond	13	21	9	17	16	25	23	35	17	26
San Leandro	9	16	11	20	18	29	3	10	36	52
San Lorenzo	13	21	15	24	22	35	5	13	40	58
San Francisco	20	32	13	23	6	13	27	40	24	35
San Rafael	25	38	20	33	27	41	34	50	8	15
San Pablo	14	22	12	20	19	30	26	38	28	41
Union City	21	31	23	38	30	45	10	18	48	68
Vallejo	30	45	27	40	34	50	40	58	20	34
Walnut Creek	20	30	16	25	21	34	25	38	39	56
NAS, Alameda	0	0	7	15	12	20	6	15	36	45
Oakland Army Base	7	15	0	0	6	15	10	15	28	40
Treasure Island	6	15	6	15	0	0	11	15	34	50
Naval Hosp. Oakland	7	15	10	15	11	15	0	0	32	45
DODHF, Novato	36	45	28	40	34	50	32	45	0	0

Source: PWC SFRAN Bay, Oakland.



Source: Sedway Cooke Associates

Figure GA-7
**APPROXIMATE PEAK
HOUR AUTO COMMUTE
TO NAS ALAMEDA**

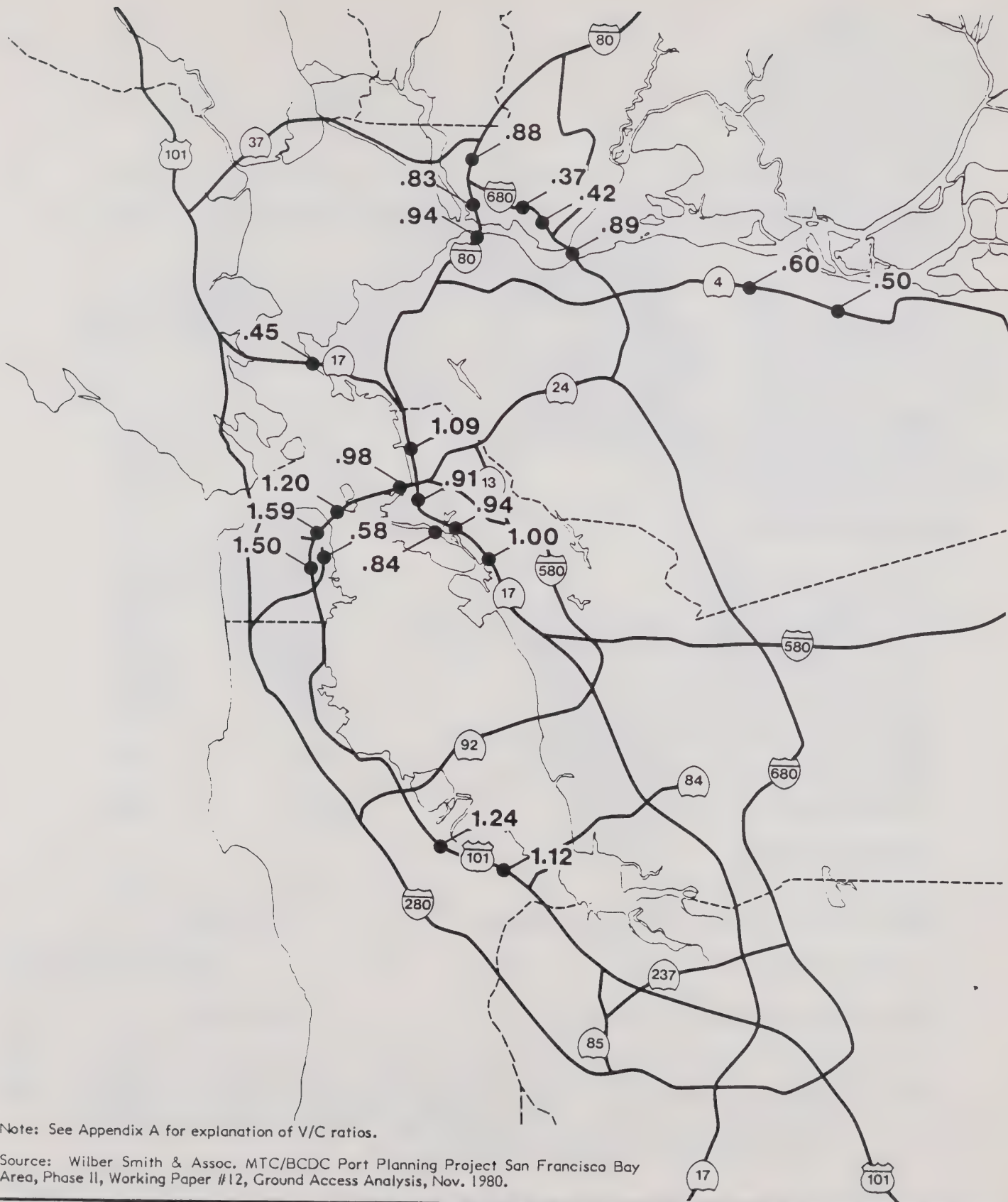


Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

Table GA-8: Estimated Average Trip Length and Travel Time for Civilian Home-Based Work Person Trips by Activity Destination (1975)

<u>Destination</u>	<u>Distance (miles)</u>	<u>Time (minutes)</u>
SUBREGION ONE		
Department of Defense Housing Facility Navato	12.96	20.97
Naval Security Group Activity Skaggs Island	15.02	20.51
Naval Shipyard Mare Island	13.47	21.92
Naval Station Mare Island	13.47	21.92
SUBREGION TWO		
Naval Air Station Alameda	10.24	22.80
Naval Hospital Oakland	10.24	22.80
Naval Public Works Center San Francisco Bay Oakland	10.24	22.80
Naval Reserve Readiness Command Region Twenty	10.24	22.80
Naval Station Treasure Island	10.24	22.80
Naval Supply Center Oakland	10.24	22.80
Naval Weapons Station Concord	13.78	24.19
Supervisor of Ship Building Conversion and Repair, San Francisco	10.93	21.24
Western Division Naval Facilities Engineering Command San Bruno	14.06	24.22
SUBREGION THREE		
Naval Air Station Moffett Field	9.33	24.34
Naval Auxiliary Landing Field Crows Landing	Not Estimated	
SUBREGION FOUR		
Naval Communications Station Stockton	Not Estimated	

Source: SCA, and Metropolitan Transportation Commission, Guadalupe Corridor Alternatives Analysis: Travel Model Development and Validation. Working Paper No. 4, Vol. I, August 1980. (Report author Hanna P.H. Kollo for Santa Clara County Transit District.)



Note: See Appendix A for explanation of V/C ratios.

Source: Wilber Smith & Assoc. MTC/BCDC Port Planning Project San Francisco Bay Area, Phase II, Working Paper #12, Ground Access Analysis, Nov. 1980.

Figure GA-8
1980 PEAK HOUR
VOLUME/CAPACITY
RATIOS



Western Division - Naval Facilities Engineering Command
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SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

likely involve coordinated transportation systems management efforts by a broad array of public and private policy makers to keep the corridor functioning.

Transit Characteristics of Navy Functional Links

Navy facilities with easy access to the regional transit network can best make use of public transportation services. Access to BART, which serves key locations in San Francisco and the East Bay, is perhaps the most critical link. Most other regional transit agencies serve BART directly with feeder buses, or indirectly with destinations at or near BART stations.

The relationship of Navy facilities to regional line haul services is shown in Figure GA-9. It illustrates the major transit access points and the buses which serve them.

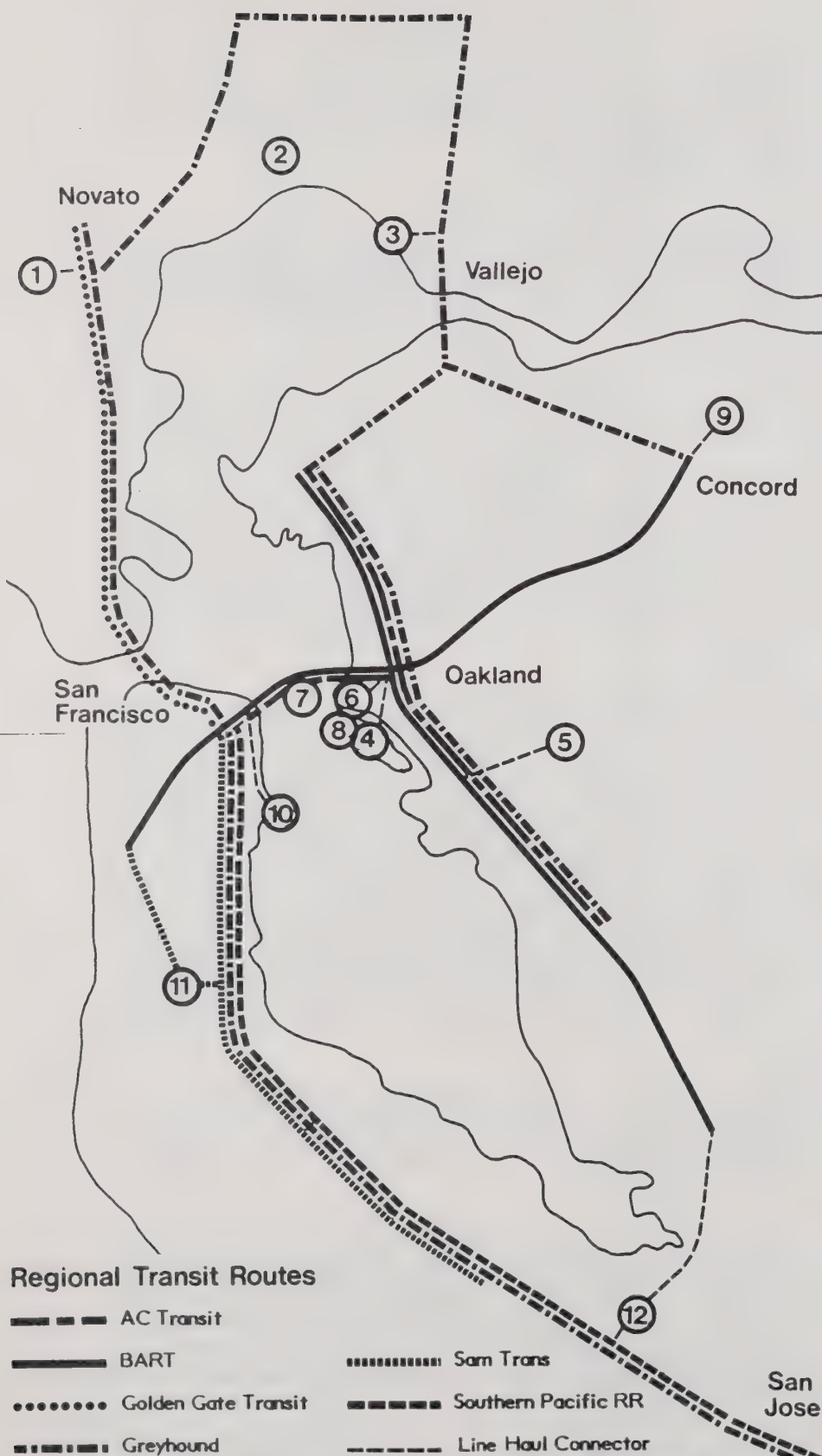
Existing transit services were analyzed in terms of three different issues: Navy personnel home-based work (HS) and health care (HC) trips originating from Naval activities; home-based work and nonwork trips for transit dependent populations located at Navy facilities and work trips with Navy facilities as destinations, but originating at locations other than Navy activities. Sources for this study include transit maps and schedules, phone calls to transit agencies, future plans of transit agencies, and Navy sources.

Work Trips Originating at Navy Activities. Table GA-9 summarizes transit access for the home-based work and health care trips, detailing the time and costs of each trip by public transit, which originate at Navy activities. Appendix B contains detailed information on each trip summarized in Table GA-9. Only those trips contained within the Oakland-San Francisco area satisfy current policy suggesting that housing and work be within one hour of each other. Activities in Subregion One are separated from other activities by great distances and many transfers; Skaggs Island and Mare Island, which are not part of a defined commuter route, are not adequately served by public transit. Commutes to and from Subregion One activities can take over an hour and a half, whereas travel within the San Francisco-Oakland area always takes less than one hour. Costs can also be prohibitive in the northern portion of the bay. Most trips from DODHF Novato, for example, cost around \$4.00 one way.

Transit trips to Naval Hospital Oakland are characterized by a BART ride to the Coliseum Station and a transfer to AC Transit, which goes directly to the Hospital. In addition, Navy van service makes trips to many facilities one or more times per day, making trips by public transit unnecessary.

What the table does not adequately address are possibilities which may easily improve existing conditions. The transit accessibility of Mare Island could be vastly improved with a bus directly to the Richmond or Concord BART stations. Relatively minor adjustments to the T and 42 lines of the AC Transit District could greatly improve the transit accessibility of Naval Station Treasure Island and Naval Air Station Alameda. These are but two examples of enhanced transit access which should be explored with the appropriate transit operators.

Transit Access for Transit Dependent Persons. Transit dependent persons are those with limited or no access to automobiles, including spouses and children of Navy personnel and junior officers and enlisted personnel. Housing facilities at Navy activities are shown in Table GA-10. Those with significant numbers of family dwelling units - Alameda, DODHF, Mare Island (and to a lesser degree, Treasure



Connection to Regional Line Haul Service

SUBREGION ONE	
①	Department of Defense Housing Facility Novato GG Transit 50/60
②	Naval Security Group Activity Skaggs Island
③	Naval Shipyard Mare Island Naval Station Mare Island Vallejo Municipal Transit Greyhound to Richmond
SUBREGION TWO	
④	Naval Air Rework Facility Alameda Naval Air Station Alameda AC Transit 42
⑤	Naval Hospital Oakland AC Transit 56
⑥	Naval Public Works Center San Francisco Bay Oakland AC Transit B AC Transit 12
⑦	Naval Station Treasure Island AC Transit T
⑧	Naval Supply Center Oakland AC Transit 82/83
⑨	Naval Weapons Station Concord BART Shuttle Bus
⑩	Supervisor of Ship Building, Conversion, and Repair San Francisco Muni 19 Polk
⑪	Western Division Naval Facilities Engineering Command San Bruno SamTrans 3B, 5L
SUBREGION THREE	
⑫	Naval Air Station Moffett Field Santa Clara County Transit 51 (from BART: County Transit 140)

Figure GA-9
REGIONAL TRANSIT NETWORK AND NAVAL ACTIVITIES



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR SAN FRANCISCO BAY AREA NAVAL SHORE ACTIVITIES

likely involve coordinated transportation systems management efforts by a broad array of public and private policy makers to keep the corridor functioning.

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Navy facilities with easy access to the regional transit network can best make use of public transportation services. Access to BART, which serves key locations in San Francisco and the East Bay, is perhaps the most critical link. Most other regional transit agencies serve BART directly with feeder buses, or indirectly with destinations at or near BART stations.

The relationship of Navy facilities to regional line haul services is shown in Figure GA-9. It illustrates the major transit access points and the buses which serve them.

Existing transit services were analyzed in terms of three different issues: Navy personnel home-based work (HS) and health care (HC) trips originating from Naval activities; home-based work and nonwork trips for transit dependent populations located at Navy facilities and work trips with Navy facilities as destinations, but originating at locations other than Navy activities. Sources for this study include transit maps and schedules, phone calls to transit agencies, future plans of transit agencies, and Navy sources.

Work Trips Originating at Navy Activities. Table GA-9 summarizes transit access for the home-based work and health care trips, detailing the time and costs of each trip by public transit, which originate at Navy activities. Appendix B contains detailed information on each trip summarized in Table GA-9. Only those trips contained within the Oakland-San Francisco area satisfy current policy suggesting that housing and work be within one hour of each other. Activities in Subregion One are separated from other activities by great distances and many transfers; Skaggs Island and Mare Island, which are not part of a defined commuter route, are not adequately served by public transit. Commutes to and from Subregion One activities can take over an hour and a half, whereas travel within the San Francisco-Oakland area always takes less than one hour. Costs can also be prohibitive in the northern portion of the bay. Most trips from DODHF Novato, for example, cost around \$4.00 one way.

Transit trips to Naval Hospital Oakland are characterized by a BART ride to the Coliseum Station and a transfer to AC Transit, which goes directly to the Hospital. In addition, Navy van service makes trips to many facilities one or more times per day, making trips by public transit unnecessary.

What the table does not adequately address are possibilities which may easily improve existing conditions. The transit accessibility of Mare Island could be vastly improved with a bus directly to the Richmond or Concord BART stations. Relatively minor adjustments to the T and 42 lines of the AC Transit District could greatly improve the transit accessibility of Naval Station Treasure Island and Naval Air Station Alameda. These are but two examples of enhanced transit access which should be explored with the appropriate transit operators.

Transit Access for Transit Dependent Persons. Transit dependent persons are those with limited or no access to automobiles, including spouses and children of Navy personnel and junior officers and enlisted personnel. Housing facilities at Navy activities are shown in Table GA-10. Those with significant numbers of family dwelling units - Alameda, DODHF, Mare Island (and to a lesser degree, Treasure

Table GA-10: Characterization of Transit Service for Navy Transit Dependent Population

Activity	Family Unit Dwelling	Unaccompanied Housing	Total Dwelling Units	Peak Hour Work Trips			Non Work Trips - Frequency			Overall Rating
				Regional Link ¹	Frequency ²	Options ³	Midday ⁴	Eves ⁵	Wknds ⁵	
NAS Alameda	1,213	1,783	2,996	2	3	3	3	3	3	17
DODHF Novato	1,197	0	1,197	2	1	2	1	1	2	9
NSA Mare Island	1,066	1,633	2,699	1	2	1	2	1	1	8
NAVSTA Treasure Island	811	5,245	6,056	2	2	3	1	2	2	12
NAS Moffett Field	658	2,140	2,798	2	2	2	2	3	2	13
WPNSTA Concord	115	359	474	2	1	1	0	0	0	4
PWC SF BAY Oakland	112	0	112	3	2	3	2	2	2	14
NAVHOSP Oakland	81	308	389	3	2	2	2	0	0	9
NSGA Skaggs Island	83	99	182	0	0	0	0	0	0	0

Notes:

¹Peak hour work trips - regional link:

0 = Service is nonexistent.

1 = Service is poor; difficult transfers from non-regional transit.

2 = Service is adequate; no more than two transfers from regional link, or one difficult transfer.

3 = Service is excellent; one or fewer transfers from regional link.

Rating is lowered if time or cost is great.

²Peak hour work trips - frequency:

0 = Service is nonexistent or frequency is greater than every 60 minutes.

1 = Poor; frequency is 35-55 minutes.

2 = Adequate; frequency is 20-30 minutes.

3 = Excellent; frequency is every 15 minutes or less.

³Options refers to relative ease of reaching more than one major employment area.

0 = Impossible to reach any employment areas by public transit.

1 = Travel time generally greater than 90 minutes; requires difficult transfers; choices may be limited.

2 = Travel time generally about 75 minutes; transfers are easier; choices may be limited.

3 = Travel time generally within one hour; transfers are simple; choices good to excellent, (e.g., just as easy to reach San Francisco as Oakland).

⁴Nonwork trips - frequency midday:

0 = Nonexistent or inconvenient service.

1 = Over 60 minutes

2 = 25-60 minutes

3 = 1-20 minutes

⁵Nonwork trips - frequency evenings, weekends:

0 = Nonexistent or inconvenient service

1 = greater than 60 minutes

2 = 35-55 minutes

3 = 30 minutes or less

Island and Moffett Field), are likely to house many dependents who leave the base either for work, school or personal trips. Activities with significant numbers of unaccompanied housing units are likely to house many junior officer and enlisted personnel who depend on transit for non-work trips. The adequacy of transit for all of these trips is characterized by the ease or difficulty of the connection to regional transit for work trips, and by the frequency of local transit for nonwork trips. Table GA-10 also provides a subjective characterization of these trips.

Again, the San Francisco-Oakland area offers superior transit service; North Bay service is weak. At Moffett Field, Southern Pacific's CalTrain is easily accessed via a single feeder bus which, in addition, serves the major arterials of that area. At DODHF Novato, a bus arrives at the main gate hourly; more buses would be accessible if residents could reach downtown Novato. Vallejo Transit serves Mare Island every 30 minutes with a five- to ten-minute ride to town.

Work Trips not Originating at Navy Activities.

Estimated transit adequacy for Navy and civilian employees commuting to Navy activities is based on the relative ease of transferring from regional line haul service to the Navy activity. This is shown in Table GA-11. For the case of Moffett Field, the transit-based commute is made easier from the East Bay by an express bus from the Fremont BART Station to the Moffett Field feeder bus near the Castro Street train station. WPNSTA Concord, NAS Alameda and other East Bay destinations are easily served by feeder buses from nearby BART stations. Mare Island, however, remains plagued with inadequate transit service, which could be improved by service to and from BART (which now involves a local bus and Greyhound), as well as to and from DODHF Novato. Appendix B contains more information on public transit service to the facilities.

Major Plans and Programs

The coordinating agency responsible for the integrated planning and development of the region serving highway and transit facilities is the Metropolitan Transportation Commission (MTC). The current Regional Transportation Plan has identified a number of proposed improvements ranging from the installation of metering controls on congested freeway on-ramps to major rapid rail line extensions. The current Plan has been supplemented by specific program amendments including the "Stage I" new rail transit starts and extensions (December 1, 1983). Together with all the amendments, a comprehensive program is continuously monitored to coordinate transportation investments in the Region.

The various proposals are not all funded, nor do they represent a list of all transportation projects that will in fact be built in future years. The proposals do, however, indicate the relative significance of the traffic problems and the regional consensus that is developing to address these problems.

A list of these proposals in the current plan that could have an impact on the ground accessibility of Navy activities has been prepared and is presented in Table GA-12. This list is organized by the geographic corridors identified in the MTC Plan and shown in Figure GA-1. For each proposal, the improvement is identified, a brief description is provided, comments are included to help define the issues or problems, and, finally, the potential impact on Navy accessibility is provided. Of all the proposals, three stand out for their significance in potentially altering ground access to Navy activities. They are:

Table GA-11: Characterization of Transit Service to Employment Concentrations at U.S. Navy Activities

<u>Activity</u>	<u>Civilian Base Loading</u>	<u>PEAK HOUR WORK TRIPS</u>			<u>Overall Rating</u>
		<u>Regional Link¹</u>	<u>Frequency²</u>	<u>Options³</u>	
NSA MARE ISLAND	11,108	2	1	1	4
NAS ALAMEDA	10,989	2	3	3	8
NSC OAKLAND	3,742	3	2	3	8
NAS MOFFETT FIELD	1,607	2	2	2	6
PWC SFRAN BAY OAKLAND	1,206	3	2	3	8
WPNSTA CONCORD	1,146	2	1	1	4
NAVHOSP OAKLAND	779	2	2	2	6
NAVSTA TREASURE ISLAND	672	2	2	3	7
WESTDIV SAN BRUNO	644	2	2	2	6
SUPSHIP SAN FRANCISCO	402	2	3	2	7
DODHF NOVATO	167	2	1	1	4
NSGA SKAGGS ISLAND	45	0	0	0	0

Notes:

¹Peak hour work trips - regional link:

0 = Service is nonexistent

1 = Service is poor; difficult transfers from non-regional transit.

2 = Service is adequate; no more than two transfers from regional link, or one difficult transfer

3 = Service is excellent; one or fewer transfers from regional link

Rating is lowered if time or cost is great.

²Options refers to relative ease of reaching more than one major employment area.

0 = Impossible to reach any employment areas by public transit.

1 = Travel time generally greater than 90 minutes; requires difficult transfers; choices may be limited.

2 = Travel time generally about 75 minutes; transfers are easier; choices may be limited.

3 = Travel time generally within one hour; transfers are simple; choices good to excellent (e.g., just as easy to reach San Francisco as Oakland.

³Peak hour work trips - frequency:

0 = Service is nonexistent or frequency is greater than every 60 minutes

1 = Poor; frequency is 35-55 minutes

2 = Adequate; Frequency is 20-30 minutes

3 = Excellent; frequency is every 15 minutes or less

Source: SCA

Table GA-12: Proposed Plans and Programs for Regional Ground Access Improvements that will Impact Navy Activities

CORRIDOR AND IMPROVEMENTS	DESCRIPTION	COMMENTS	IMPACT ON NAVY ACCESSIBILITY
Golden Gate Corridor Route 101 Improvements	Improvements under consideration are high occupancy vehicle lanes between Greenbrae and Hwy. 37; a Cloverdale bypass; and interchange improvements.	Jobs, housing, and housing price imbalances are a principal concern in this corridor. A number of trunk and local transit proposals are being considered for implementation. Transportation proposals in the Corridor should be evaluated in terms of their possible impacts on the balance of jobs and housing. Solutions necessitating minimal increases to existing capacity should be given priority, especially in locations north of Santa Rosa. First priority consideration in use of additional highway capacity on Rte. 101 is being given to exclusive bus and carpool lanes in those sections where trunk and local transit operates on the facility.	The proposed improvements will reduce congestion for south-bound commuters from DODHF but expected increase in traffic will likely minimize the effect.
West Bay Corridor Trunk Transit Service	Short-range improvements include: (a) upgrading of commuter rail service including improved service in the reverse direction at peak hours, improved off peak service, and improvements to stations and parking facilities; (b) provision of improved transit service to the Southern Pacific (Caltrans Peninsula Train Service) Terminal in San Francisco at 4th and Townsend Streets; (c) supplemental bus service on I-280 and Route 101; (d) improved facilities for bus movement on existing freeways in the corridor; (f) coordination of trunk transit service with local transit systems in Santa Clara and San Mateo Counties; (g) provision for public acquisition of a segment of the S.P. right-of-way south of Daly City if that right-of-way is abandoned. Possible long-range alternative transportation improvements within an abandoned SP right-of-way include: (a) a BART extension to a location in the vicinity of San Francisco Airport; (b) a rail extension from San Bruno to the BART terminus in Daly City; (c) other fixed guideway transit facilities. In December 1977, MTC adopted the <u>PENTAP Transit Dependent Study</u> report, which contains additional specific proposals for improving transit service in the Peninsula commuter train corridor.	Study of alternative transportation systems for the corridor indicates that the most effective way to improve transit service over the next 15 to 20 years is by upgrading existing rail and bus service to provide a coordinated and integrated system. This approach, along with retention of S.P. right-of-way as it is abandoned, provides flexibility for adding new facilities in the longer range, as required. Upgrading service in this corridor, which in the Santa Clara Valley Corridor Evaluation was projected to have the highest patronage potential of any potential rail corridor in Santa Clara County, should be considered as the highest priority in ensuring the success of any extensions of rail service in Santa Clara County. Caltrans and the SP Transportation Company have concluded contract agreements to continue existing commuter services. MTC has identified and recommended basic improvements to the rail commuter service to be given high priority for UMTA and state transit funding support.	The proposed improvements would have minor impacts on the commute patterns of Navy personnel due to the high cost of housing in the corridor. However, the improvements may substantially increase accessibility of Hunters Point Shipbuilding, Conversion, and Repair facility to the civilian work force.

Table GA-12
(continued)

<u>CORRIDOR AND IMPROVEMENTS</u>	<u>DESCRIPTION</u>	<u>COMMENTS</u>	<u>IMPACT ON NAVY ACCESSIBILITY</u>
West Bay Corridor Hunter's Point Roadway	A less-than-freeway facility through southeastern San Francisco, within the Rte. 230 (proposed) corridor, with interchange connection to I-280 at Third Street in the vicinity of Islais Creek.	Local streets in this area are congested with commercial and private vehicles. This situation may be further aggravated by shipping and redevelopment activities. A solution must be found which will have minimal impacts on neighborhoods. While the specific design and location for the proposed facility is still under study, it has been determined that its northern terminus will be at the proposed interchange. Protection of the Bay's environment necessitates care in locating, designing, and constructing the entire facility, including the interchange. Transit service should be improved to decrease auto use.	The proposed improvements could greatly enhance accessibility of Hunters Point Ship Building Conversion, and Repair Facility.
West Bay Corridor Trunk Transit in Third Street Corridor	Alternative transit improvements to be considered. Current attention centered on surface street car to be linked to Geary Corridor, Southern Pacific Station, Transbay Terminal and Marin ferries. Possible secondary transit route connecting to San Francisco International Airport.	Route is an important regional and San Francisco travel corridor. Rapid transit would both relieve existing congestion and improve access to employment opportunities, especially for lower income areas of San Francisco.	The proposed improvements would substantially improve transit interconnections between Hunters Point and Treasure Island or Alameda.
West Bay Corridor Regional Transbay Transit Terminal	A proposal to upgrade the existing Transbay Terminal to accommodate commuter bus services and some long-haul bus service.	The Transbay Terminal is a regional resource for transfers between transit systems, and provides offstreet loading and direct access to the Bay Bridge. Transit capital priorities established by MTC for 1982-86 include the Transbay Terminal as one of the projects competing for I-280 transfer funds on the condition that a \$20-25 million alternative, which may be an initial phase of a larger phased project, will be developed for consideration. The amount of upgrading at any phase should be consistent with regional priorities for improved transit service to San Francisco, and a reliable assessment of capacity needs of carriers that are prepared to use the facility.	The proposed facility would substantially reduce ground access conflicts and improve interregional connections for Hunters Point shipbuilding conversion, and repair facility.
Santa Clara Valley Corridor Transit Service Improvements (Local and Express Service)	By 1990, the Santa Clara County Transit District should have in operation approximately 750 buses. Expansion beyond the currently programmed 516 bus fleet should emphasize express service to downtown San Jose, express service from residential terminals to jobs in industrial parks, improved feeder service to and from S.P. stations serving the Caltrans Peninsula Train Service, and improved connections with BART.	The analysis conducted during the Santa Clara Valley Corridor Evaluation indicated that transit can become an important factor in reducing peak period congestion by focusing service for commuters. The scattered location of jobs in Santa Clara County, without the high-intensity concentration found in other metropolitan areas, necessitates the deployment of express bus terminals throughout the urbanized area. Increasing transit's share of trips will require innovative marketing techniques, improvements in reliability and coordination with major private employers.	The newly expanding system will greatly improve transit access to the S.P. line and thereby increase feasibility of a transit commute to Moffett Field.

CORRIDOR AND IMPROVEMENTS	DESCRIPTION	COMMENTS	IMPACT ON NAVY ACCESSIBILITY
Santa Clara Valley Corridor Transit Service Improvements Guadalupe Corridor	The SCVCE recommended development of a light rail line in the Guadalupe Corridor, and preservation of the full existing right-of-way for the proposed Route 87 south of Curtner Avenue for future transportation development.	This Santa Clara County Transit District Project will run for 20 miles from the Almaden and Edenvale residential areas of South San Jose to the industrial parks in North San Jose and Santa Clara. Technical and environmental studies have been completed and funding has been approved to begin construction and purchase vehicles.	The proposed system will greatly improve transit accessibility to moderate cost housing areas in south and central San Jose. First phase improvements will interconnect with Southern Pacific in downtown San Jose permitting a convenient connection to Moffett Field though the trip would still involve a minimum of two transfers. Possible future extensions at the north end of the corridor will link to Lockheed but not likely any further north. Shuttle services to Moffett Field may then prove feasible.
Santa Clara Valley Corridor Improvements to Federal Aid Primary Highways (F.A.P.)	- o Route 237 - Upgrade to a four-lane freeway by replacing the existing at-grade intersections with freeway interchanges. The limits of converting this facility to a four-lane freeway will be between Route 17 and Route 85. - o Route 101 - Widen from four to six lanes in vicinity of Alum Rock Interchange. - o Route 101 - Add auxiliary lanes (weaving lanes between interchanges) between Route 17 and the San Mateo County line. - o Route 17 - Widen by adding one lane in each direction from Route 101 to Fremont. The exclusive use of these lanes by buses and car-pools should be considered in conjunction with the deployment of additional express bus routes that would utilize this facility.	In July, 1980 the MTC approved The Route 237 Report, which lists specific proposals for improving Rtes. 237, 17 and 262, indicates current costs of improvements, and suggests next steps in moving proposals toward implementation. The report, prepared by MTC with participation by municipalities in the area and other concerned agencies, also sets priorities for implementing improvements, recommends reclassification of Rte. 237 from the Federal Aid Urban (FAU) system to the Federal Aid Primary (FAP) system, and requests initiation of environmental documentation. Improvements to Route 101 in both San Mateo and Santa Clara Counties are also described under Proposal No. WB-4. Improvements to I-280 in both counties are described under Proposal No. WB-5.	Proposed roadway improvements will help alleviate some peak hour congestion problems for commuters to Moffett Field.
Santa Clara Valley Corridor Improvements to Federal Aid Urban Facilities (F.A.U.)	- o Routes 85 and 87 - Protect right-of-way and continue purchases as required for these transportation corridors. - o Route 87 - Construct four-lane expressway with appropriate grade separations to connect with the Almaden Expressway in the vicinity of Curtner Avenue. The remaining corridor right-of-way should be protected for future transportation purposes. - o Montague/San Tomas interchange at Route 101 - Widen the existing bridge over Route 101 from two to six lanes to match the roadway widths of the two adjoining expressways.	These major projects are listed in order of priority for the use of Federal Aid Urban (F.A.U.) funds in Santa Clara County. Estimated ranges of combined construction and right-of-way costs are shown in millions of 1980 dollars. Other potential uses of these funds such as interchange modifications, arterial street improvements, and transit-related improvements have not been included because most of these will be of purely local significance. An environmental assessment of the Rte. 87 right-of-way acquisition was completed in March, 1981. A similar assessment is being conducted for purchase of right-of-way in the Rte. 85 alignment by Caltrans. An assessment for purchase of right-of-way in the section of Rte. 85 in the	Proposed roadway improvements will help alleviate some peak hour congestion problems for commuters to Moffett Field.

Table GA-12
(continued)

CORRIDOR AND IMPROVEMENTS	DESCRIPTION	COMMENTS	IMPACT ON NAVY ACCESSIBILITY
Santa Clara Valley Corridor Improvements to F.A.U. (cont.)	a Route 85 - Make operational improvements in Cupertino. The existing Caltrans project to extend a freeway or expressway to Sunnyvale-Saratoga Road, will be considered. The project is to be designed to avoid simply shifting traffic from Cupertino to San Jose and Saratoga Streets.	City of San Jose from Rte. 17 to Rte. 101 is also being conducted by the City of San Jose.	
East Bay Corridor Local Transit	Improvements include a higher level of transit service in the existing Alameda-Contra Costa Transit District, which covers the East Bay urbanized area from Richmond in the north to Hayward in the south; and transit in adjacent areas: south of Hayward to include the Tri-Cities area (Newark, Fremont, and Union City), and in the Pinole-El Sobrante area to the north and east of the District. Transit operations also include some long-haul routes, and express service in the corridor and transbay lines over the Bay Bridge.	Local transit improvements are being implemented in accordance with Five-Year Plan. MTC has adopted a Transit Finance Plan in accordance with AB 842.	The proposed improvements may increase local access to Richmond BART station and potentially improve transit orientation for Mare Island, Point Molate, and Bay Bridge commutes.
East Bay Corridor Trunk Transit	BART extension to Warm Springs - this BART extension would run 5.7 miles from the BART terminus in Fremont to the Warm Springs area of Fremont.	The extension would provide better access for residents of Santa Clara County to the BART system and for residents of the BART District to the growing job opportunities in Southern Alameda and Santa Clara Counties, while removing traffic from the downtown area of Fremont. This extension is a logical first step in providing a rapid rail connection with San Jose.	The proposed extension would increase accessibility marginally for transit commutes to and from Moffett Field.
East Bay Corridor Route 17 Hoffman Corridor	Proposed construction of an improved highway connection between the Richmond-San Rafael Bridge and I-80 bypassing central Richmond to the north.	The need to provide a better connection between the bridge and freeway is recognized. The proximity of the route to the Bay in its southern alignment causes concern for possible adverse impacts upon the natural environment. The facility itself could be crucial to plans for port development and other economic development activities in the adjacent low income community.	The proposed improvements to the I-80 corridor will affect many commuters between Alameda/Treasure Island and north Bay Area Activities. Expected increases in traffic, however, will generally eliminate any improvements to roadway capacity.
East Bay Corridor Routes 24/17 Grove-Shafter Completion	This project will complete the last link of the Grove-Shafter Freeway (Rte. 24) in West Oakland from the MacArthur Freeway (I-580) to the Nimitz Freeway (Rte. 17).	Construction is under way along most of this facility. Connection with Route 17 is programmed.	Minor impact.
East Bay Corridor Route 17 Upgrade	(a) Complete the full interchange at Routes 17 and 238 and widen Rte. 238 to 6 lanes from approximately Rte. 17 to the I-580 interchange transition; (b) widen Rte. 17 to 8 lanes between Rte. 92 and Rte. 238 and modify intervening interchanges as appropriate; (c) provide ramp metering on Rte. 17 from Santa Clara County line to Oakland at appropriate locations; (d) modify selected interchanges on Rte. 17 from Santa Clara County line north to Rte. 92; and (e) provide preferential treatment for transit and car-pools at appropriate metered ramps.	These recommended improvements are results of amendments to the Regional Transportation Plan adopted by the Commission in 1978. The recommendations are intended to maintain a reasonable level of service in the north-south Route 17 corridor and the east-west Route 92/238/I-580 corridor.	The proposed improvements will improve accessibility of the major Activity centers in Alameda and Oakland with a larger, moderately priced housing supply in the southeast Bay Area, including Livermore. The improvements should extend the area within the 1 hour commute distance.

CORRIDOR AND IMPROVEMENTS	DESCRIPTION	COMMENTS	IMPACT ON NAVY ACCESSIBILITY
East Bay Corridor I-580 HOV Lanes	A reversible HOV facility from the I-580/ Rte. 24 interchange to the Bay Bridge, partially on new alignment, partially elevated, and bypassing the toll plaza.	Caltrans is currently doing design studies and environmental documentation.	The improvements could alleviate congestion in the commute trip between Concord Weapons Station and NAS Alameda and Treasure Island.
Livermore Corridor Trunk Transit: Between the Urbanized East Bay Corridor and the Livermore Corridor	A BART extension between Livermore and Hayward via Dublin Canyon has been proposed but is not on the list of "stage I" new rail transit starts and extensions.	Mounting development pressures in the Livermore Valley require careful monitoring and management, because of serious environmental problems. Decisions about improving accessibility are an integral part of any strategy to control growth. While fixed rail extensions to the Valley may reduce auto travel on major freeways, the resultant impacts on growth may exceed desirable limits, thereby damaging environmental resources. Final decisions about trunk rail require consideration of these concerns as well as development of priorities for BART extensions.	This distant proposal has minor impacts pending future action on the extension. If implemented, it could have major implications on access to moderate-priced housing for Navy personnel.
Livermore Corridor Local Transit	Proposals to provide local bus service within the corridor with connection to express bus.	Local transit is necessary to provide service to non-auto population and to support trunk transit.	Minor until trunk lines are improved.
Livermore Corridor I-580	Widening and improvements to I-580 freeway from Hayward east to Livermore with median reserved for future rapid transit, and provision for preferential treatment for buses and carpools	I-580 is an important interregional link in the State Highway System. Serious environmental problems could develop if additional capacity is provided without careful growth management. Two HOV lanes, one in either direction, are currently in operation between I-680 and Eden Canyon Road. Review is underway of the appropriateness of these lanes as well as of the proposal for completion in the near future of the HOV project west to the I-580/Rte. 238 interchange.	This proposal could have significant impacts on the time-distance accessibility by auto of moderate-priced housing for Navy personnel.
Central Contra Costa County Local Transit	Proposal to develop and implement local bus system for urbanized portions of central and eastern Contra Costa County: Martinez, Pittsburg, Antioch, Pleasant Hill, Concord, Clayton, Orinda-Moraga, Lafayette, Walnut Creek and Danville; including fixed routes for bus service and areas for demand-actuated service.	Central Contra Costa Transit Authority has developed a plan to address these improvements in the central county. The Eastern Contra Costa Transit Authority has developed plans for transit in the Pittsburg-Antioch-Brentwood area.	The fledgling transit system will not likely make major changes in existing service patterns.
Central Contra Costa County BART (fixed rail) from Concord to North Concord	This BART extension would run 2.6 miles from the BART terminus in Concord to North Concord.	The logical first step of a potential 20 mile extension to Eastern Contra Costa County, the project would provide vastly improved access to BART for Martinez, Pittsburg, Antioch, and Brentwood, as well as Solano County while alleviating auto congestion in downtown Concord.	This extension could have major and dramatic impacts on the accessibility of the Concord Weapons station to the region. Induced growth pressures near the weapons station, resulting from the increased accessibility, could also involve substantial encroachment issues. The possibility of a BART station located on Navy land has the potential of achieving coordinated planning that could significantly increase the Navy's ability to influence surrounding land use decisions.

CORRIDOR AND IMPROVEMENTS

DESCRIPTION

COMMENTS

IMPACT ON NAVY ACCESSIBILITY

Central Contra Costa County I-680 Improvements

Develop proposals to upgrade I-680 from Rudgear Road (Walnut Creek) northward to the Benicia-Martinez Bridge. Improvements to be evaluated include upgrading interchanges, with emphasis upon the I-680/Rte. 24 interchange, lane widenings, auxiliary lanes, HOV lanes, and ramp metering.

Caltrans is currently conducting an I-680 corridor study to determine the feasibility of, and the appropriate location for, the improvements identified. Public transportation improvements are being considered.

Minor impacts on the commute from Concord weapons facility to NAS Alameda.

Solano-Sacto Corridor Trunk Transit

Develop park and ride lots along I-80 and plan for transportation centers in populated areas of Solano County which would facilitate the use of existing and proposed county transit services.

Park and ride lots included in County Transportation Plan.

The proposed park and ride lots could improve access to Mare Island from moderate priced housing in the corridor if shuttle connections were provided between I-80 and Mare Island.

A ride-sharing program has been initiated; plans are being developed to expand this program.

Transportation Council of Solano County and PCC provide basis for coordination of services.

Study proposed sites for transportation centers along I-80 between Vallejo and Dixon.

North Bay Corridor Route 37 from I-80 to Rte. 101 (Sears Point Highway)

Improvement to four lane expressway standard (ultimate development).

Important link for regional and inter-regional travel between Rte. 101, the Redwood Highway, and I-80 connecting to Sacramento. Environmental concerns dictate constraints on extent of improvements. Capacity improvements should be in step with traffic demands, and staged to ensure that traffic pressures on the Napa Valley and Valley of the Moon are minimized.

Proposed improvements would improve accessibility of Skaggs Island and dramatically improve connection between DODHP and Mare Island.

- Improvements in the Third Street Corridor in San Francisco connecting Hunter's Point with the downtown;
- BART extension to North Concord; and
- Proposed upgrading of Route 37 in the North Bay from I-80 to Route 101 (Sears Point).

Hunters Point Improvements. The particular mode of improvements, whether Muni trolley line, bus line, or merely street improvements all have significance for future development potential at the ship building, conversion, and repair facility. The proposed improvements would improve the link for any increase in activity at Hunters Point with the transbay corridor (Treasure Island - Oakland). If combined with an intermodal terminal facility in the financial district, Hunters Point will be conveniently connected to the major transportation hub of the region. And if housing were to be provided at Hunters Point, the facility could take advantage of the less congested reverse commute on the Bay Bridge corridor.

BART Extension to North Concord. The proposed extension of BART to North Concord has the potential to affect more than just ground access to the Concord Weapons Station. Induced growth pressures near the Weapons Station, resulting from the increased accessibility, could involve substantial encroachment issues. The possibility of a BART station located on Navy land, however, has the potential of directly integrating the Navy in surrounding land use decisions and thereby influencing the local decision process.

Independent of the larger land use and encroachment issues, the proposed improvements represent significant increases in public transit accessibility to personnel at the Weapons Station and could potentially improve its utility as a housing site for other Navy activities. Master planning of the activity, however, will need to carefully integrate this improved transit function to achieve all the potential benefits while avoiding adverse effects.

Route 37 Improvements (Sears Point). The proposed improvements to Route 37 would substantially affect both direct access to Skagg's Island as well as the commute between DODHF and Mare Island. The north bay corridor, in fact, is key to the rational integration of the housing supply at DODHF with Mare Island, thereby avoiding the major congestion due to civilian traffic in the 101 corridor in Marin.

REGIONAL ISSUES/OPTIONS

Issue 1: Because the Naval Shore Establishment is both interdependent and widely dispersed throughout the Region, its ability to function is directly related to the operational efficiency of the Regional group access network. This network is currently operating at or in excess of capacity in many of the links heavily used by the Navy and this condition will be exacerbated to an unknown degree by the continued economic growth of the Region.

Option:

(a) Maintain status quo.

- (b) Substantially increase the Navy's level of participation in the Regional transportation planning process conducted by the Metropolitan Transportation Commission. (See Issue 2, Option (c).)
- (c) Develop a low cost, annual survey technique for obtaining data on place of residence/place of work/mode of travel for Naval and civilian employees of the Naval Shore Establishment in order to document Regional commute patterns and related factors for use in Navy Regional transportation planning as well as in decisions regarding the future location of Navy Regional serving facilities such as housing, health care, commissaries, and exchanges.
- (d) Options (b) and (c).

Issue 2: The Navy Shore Establishment is not well-served by Regional public transit.

Options:

- (a) Maintain status quo.
- (b) Initiate coordination with Regional transit operators to improve transit accessibility for Naval personnel, especially the transit-dependent.
- (c) Substantially increase the Navy's level of participation in Regional transit transportation planning process. (See Issue 1, Option (b).)
- (d) Options (b) and (c).

Issue 3: The Regional transportation network is tied together by many bridges and tunnels whose destruction or temporary disruption would severely impact all elements of the Region, including the Naval Shore Establishment.

Options:

- (a) Maintain status quo.
- (b) Assess impacts of bridge and tunnel destruction and disruption on individual Naval activities as part of the activity master planning process and develop contingency plans.
- (c) Option (b) plus integrate individual contingency plans into a Regional ground access contingency plan.

XIV. LAND USE COMPATIBILITY

OVERVIEW

This functional system covers a wide range of issues, including encroachment, joint use, excessing of unutilized lands, and intergovernmental coordination, under the heading of "land use compatibility." This topic could also just as well be called "mission compatibility" or "mission protection." The scope of this system is best understood by reviewing its objectives.

Objectives

The objectives of this system are to anticipate, influence, and direct non-Navy actions planned or executed on or in the vicinity of Navy activities or operation areas which would inhibit, curtail, or possess the potential to impede the performance of the missions of Navy activities.

General Characteristics

Land use compatibility is one of the least tangible of functional systems. Its focus is not on land, piers, ships, or aircraft per se, but on the institutional arrangements and decision-making processes which determine their use and disposition. These arrangements and processes exist within both the private and public sectors and they rely heavily on personal relationships.

The mechanics of land use compatibility are not always open to view and are very subtle in their operations. It is often the case that this system becomes tangible only when the moment for action to resolve incompatibility has passed. For example, a runway must be closed due to complaints from the community about aircraft noise impacts, Navy real estate is transferred to the private sector or another public agency, or a lawsuit is filed to enjoin Navy action on a project.

Given the intangibilities of this system and the subtleties of its operation, success in dealing with it requires a set of skills different from those typically associated with the military commander.

REGIONAL CONTEXT

Relations with Other Functions

Virtually all Naval activities in the Bay Region are subject to land use compatibility issues. These issues were preliminarily documented in the Naval Shore Establishment Overview/Activity Profiles Report. What distinguishes land use compatibility from other functional systems with broad Regional relationships is that each activity is responsible in large part for addressing its own land use issues. Only very limited technical assistance is available from Western Division Naval Facilities Engineering Command.

Relations with Civilian Community

The Naval shore establishment of the Bay Region and its constituent activities are located within a densely populated metropolitan area which has a strong and expanding economy, is one of the prime national real estate markets, and is a center for international investment. Given these factors, the Navy holds real estate within the Region which is exceptionally attractive to the private sector. In addition to holding prime real estate, the shore establishment uses many of the Region's natural and man-made resources, including water, airspace, waterways, ground transportation, and energy, some of which are at or approaching capacity. In its daily operations the Navy generates impacts which "spill-over" beyond its boundaries onto the adjacent civilian community. Some of these spill-over effects are perceived as being adverse, such as air pollution generated by degreasing and painting, noise from jet aircraft testing, and risks of injury and property damage associated with proximity to ordnance. Other spill-over effects have no adverse impact, but could be adversely affected by actions occurring on non-Navy land, such as the construction of a building blocking VHF transmissions to and from Navy antennas. Finally, in certain situations actions occurring on non-Navy land generate effects which spill-over onto Navy property, impeding operational capabilities. Such reverse spill-over effects include electro-magnetic interference, traffic congestion at access points to Navy activities, public demonstrations, and regulatory and permit requirements.

OPERATIONAL ELEMENTS

Organization

Land use compatibility is decentrally organized, to the extent that it can be said to be organized, within the Bay Region. Each activity within the Region approaches land use compatibility independently, although Regional coordination is increasing. Technical assistance is provided by Western Division Naval Facilities Engineering Command.

The organization of the civilian sector of land use compatibility is similarly decentralized. Land use planning in California is under the jurisdiction of cities and counties. Comprehensive Regional planning does not exist within the Bay Area, but there is a wide range of special purpose planning and/or regulatory agencies with jurisdiction over specific resources, including air, the Bay, and transportation.

Types of Land Use Compatibility Problems

There are several types of land use compatibility problems. Since each type requires a different response, they are individually described below with examples provided from the Bay Region.

Loss or Shared Use of Facilities. The most adverse type of land use compatibility problem results in the loss of Navy land or buildings or the shared use of such facilities with elements of the civilian community. Examples of this problem include a proposal by an oil well module fabrication company to lease 100 acres of land and one warehouse at NCS Stockton, and the proposed joint military-civilian general aviation use of landing fields at NAS Moffett Field. Both of these proposals were successfully opposed by the respective activities.

In certain instances, shared use of Navy facilities may be beneficial to the activity. For example, Navy real estate personnel are currently negotiating with the Bay Area Rapid Transit District (BART) for the lease of land at Naval Weapons Station Concord to construct a park and ride lot in the short-term and possibly develop this site as a BART station over the long-term. These short and long term facilities plans could greatly benefit personnel stationed at Concord, if they will not present land use compatibility issues. The task here is to adequately explore the long-term implications of these facilities vis-a-vis Weapons Station operations to ensure there are no hidden issues which would later become evident to the detriment of the Station.

Competition for Scarce Resource. Land use compatibility issues arise when the Navy and the civilian community compete for scarce resources. Examples in the Region of resources which are subject to such competition include air traffic control space and capacity on the San Francisco-Oakland Bay Bridge.

Navy Generated Spill-Over Effects. Certain Naval operations cause impacts which go beyond the boundary of an activity to adversely affect the civilian community, which in turn may bring political pressure to bear on the Navy to cease or reduce the offensive operations. Examples of such spill-over effects include noise and accident potential impacts at NAS Alameda and Moffett Field, air pollution impacts from painting at NAVSHIPYD Mare, and risk of injury and property damage from Naval Weapons Station Concord.

Civilian Generated Spill-Over Effects. In certain situations, civilian activities can adversely impact operations at Naval activities. The most common example of this type of land use compatibility issue is electromagnetic energy from civilian sources which interferes with the operation of Navy antennas.

ANALYSIS OF OPERATIONAL ISSUES

The Activity Commanding Officer

The key actor in the land use compatibility arena is the activity commanding officer, but this individual faces several handicaps in effectively playing the role assigned to him. All commanding officers are undertrained in this area. The formal school for the prospective activity commanding officer (PACO) devotes limited attention to this subject and the material presented must necessarily be generalized and may or may not be relevant to the situation the PACO will face when he/she actually assumes command. Depending on the individual orders of the relieved and relieving commanding officers, there may not be time for an adequate turnover in this area.

All commanding officers are understaffed to meet the demands of land use compatibility. In addition to the issues of adequate numbers of personnel and expertise, continuity is particularly important. Turnover in military staff is a fact of life, but turnover in civilian positions assigned responsibility for land use compatibility can be especially damaging because of the personal nature of this functional system and the need to understand the historical context of land use decisions.

Finally, the authority of the activity commanding officer, especially as it is perceived by the local community, to address land use compatibility issues is constrained. Contrary to community belief, the commanding officer does not have absolute authority over everything and everybody "within the fence." As noted in the functional analysis of regional commanding relations, every large activity comprises a host of tenants whose chains of command bypass the activity commanding officer and extend outside the Region to commanders located elsewhere, who may or may not understand and be sympathetic to local land use issues. This situation limits the options of the commanding officer, both to respond to community complaints by managing the spillover impacts of his command, and to anticipate future land use issues by having knowledge of the future operational requirements which may be placed on him by tenant commands.

The Activity Master Plan

Although it is dangerous to generalize in this area, activity master plans tend not to devote adequate attention to land use compatibility issues. Deficiencies exist in several areas.

Master plans tend not to quantify the individual physical requirements, e.g., feet of berthing, airspace, acres of land, required by an activity's existing missions and to assess each in turn to determine its existing and potential exposure to each of the categories of land use compatibility problems. But equally important, the master plan does not identify land use compatibility issues raised by future missions which may be assigned to the station.

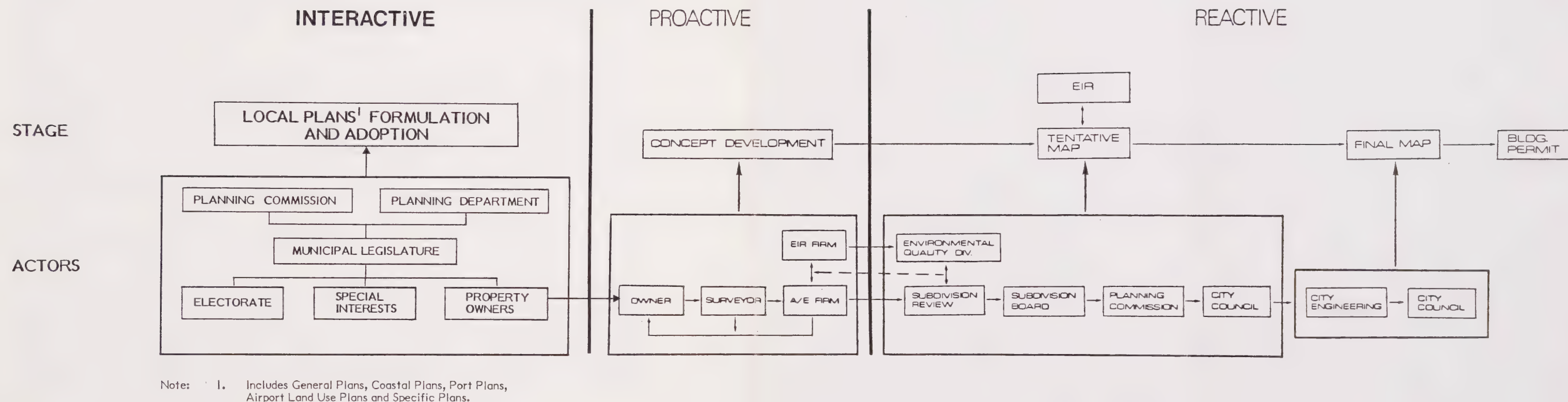
Documentation of physical requirements of existing and potential missions is extremely important in order to build a record which may someday have to withstand public and possibly judicial scrutiny. But beyond this need, predicting land use compatibility issues is essential to developing a strategy to prevent their occurrence.

Naval Facilities Engineering Command

The primary role of Naval Facilities Engineering Command with respect to land use capability is played at the level of the Engineering Field Division. In the Bay Region, this role is played by Western Division Naval Facilities Engineering Command. Land use compatibility is a dynamic, rapidly changing area and this is reflected in the lack of a clearly defined role for Western Division, as this role is perceived both by Western Division staff and the activities within the Region. Staff resources which Western Division has been able to allocate to land use compatibility are extremely limited. Consequently, Western Division can only offer minor assistance to activities within the Region and it is virtually precluded from any meaningful participation in planning conducted by Regional planning and regulatory agencies. Apart from limited staff resources, participation is constrained by present management policy which limits staff opportunities to attend evening meetings of Regional and local planning agencies.

Reactive, Proactive, and Interactive

Much of the recent discussion of land use compatibility has centered on the appropriate point for Naval activities to intervene in the development process of lands surrounding them in an attempt to influence the decision-making process. To date the focus has been on the need to shift from intervention during the development phase characterized as **reactive** to the **proactive** phase. These two phases of the land development process are shown in Figure LUC-I.



Source: Sedway Cooke Associates and NAS Miramar Land Use Compatibility Management Study

Figure LUC-1
DEVELOPMENT PROCESS AND POINTS OF INTERVENTION



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

Proactive is superior to reactive intervention because it occurs earlier in time before many irrevocable decisions have been made by the prospective developer. However, proactive intervention does not offer the best approach. Even at the point of project concept development, the project proponent has already made a substantial financial investment and certain project parameters have become fixed. In the sense that a Navy activity intervening during the proactive phase is commenting on a project which has already been conceptualized, its posture is still a reactive one.

The recommended approach for the Navy is intervention during the development process phase characterized here as **interactive**. As illustrated in Figure LUC-1, the interactive phase occurs prior to project conceptualization and when local government plans are either being adopted or amended.

By law, every city and county in California must adopt a general plan containing nine elements. Each of these elements, which are shown in Figure LUC-2 along with their statutory interrelationships, has the potential to directly affect Navy activities through their application to lands surrounding them. Also under California law, local government zoning and subdivision ordinances must be consistent with the municipality's general plan. Finally, California law sets minimum requirements for public notification and participation in the review and adoption and amendment of general plans, and proposed plans and significant amendments to them require the preparation of Environmental Impact Reports.

California law also provides for other local plans, including coastal plans, port plans, airport land use plans, and specific plans.

Interactive participation by the Navy in the public review and hearing processes associated with local plans, especially general plans, offers Bay Area Naval activities the best approach to land use compatibility as it addresses the development of lands adjacent to them. Interactive participation can be both informal and formal. The former requires a high degree of working level, personal interaction with planning staff and commissioners. Formal participation occurs in a more open environment and may take the form of testimony at a public hearing. Each style of participation will need to be used at different times during the interactive phase.

Interactive intervention does not preclude the need for proactive, or even reactive, intervention. Depending on how successful the Navy activity is in achieving reflection of its land use compatibility concerns in local plans, it may be required to do more or less proactive intervention. Despite the best efforts during the interactive and proactive phases, there will always be the need for some amount of stop-gap, reactive intervention.

REGIONAL ISSUES AND OPTIONS

Issue 1: Activity commanding officers are not adequately prepared and do not have adequate staff resources to play their demanding roles in land use compatibility matters.

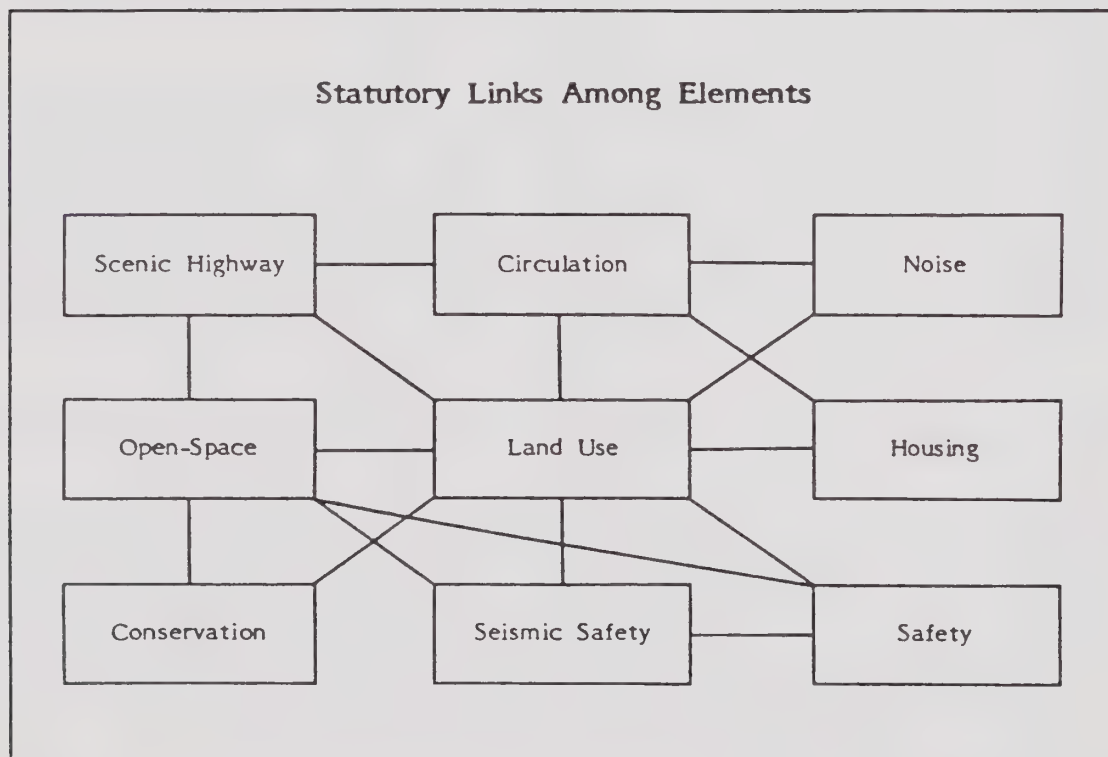


Figure LUC-2
**NINE MANDATORY ELEMENTS OF THE
 CALIFORNIA GENERAL PLAN**

Options:

- (a) Maintain status quo.
- (b) Task Western Division Naval Facilities Engineering Command with developing a "short-course" (1 to 1 1/2 days) for newly arriving Bay Region activity commanding officers. This course should include current land use issues specific to their activities, briefings on local and regional land use agencies and personnel with whom they will deal, and background materials on regional land use issues.
- (c) Expand the land use compatibility coverage in the orientation course prospective activity commanding officers receive prior to arriving in the Region to assume command.
- (d) Establish dedicated land use compatibility billets at activities.

Issue 2: Activity master plans do not adequately address land use compatibility issues.

Options:

- (a) Maintain status quo.
- (b) Make land use compatibility issues, including analysis of an activity's existing and potential exposure, formulation of policy, and development of an implementation program, an integral part of all activity master plans.

Issue 3: The role of Western Division Naval Facilities Engineering Command in land use compatibility matters is not clearly defined, especially as it relates to Navy activities. Adequate staff resources are not assigned to this area, and Western Division does not play a high-level role in regional planning.

Options:

- (a) Maintain status quo.
- (b) Clearly establish land use compatibility roles of Western Division and Navy activities within the Region.
- (c) Assign additional staff to the Intergovernmental Affairs Unit at Western Division, and revise management policy to facilitate evening public meeting attendance by Western Division personnel.
- (d) Increase involvement of senior level Western Division staff in Regional planning programs, such as the Seaport Plan, the Regional Airport Plan, and the Regional Transportation Plan.

Issue 4: Under California law, cities, counties, and special purpose agencies are engaged in a sophisticated land use planning process which has extensive formal and informal opportunities for public participation, yet Navy activities participate in this process only to the extent of reacting to proposed land development projects.

Options:

- (a) Maintain status quo.
- (b) Make the transition from reactive and proactive participation in the land development process to interactive participation.

XV. HEALTH CARE

OVERVIEW

Objectives

The Navy's health care functional system is designed to provide medical and dental care, maintain occupational health and safety, and sustain preventative medical functions analogous to civilian public health departments to all eligible personnel. In addition, the health care system provides training for corps personnel as well as other medical professionals to develop medical skills necessary for present and future military needs.

General Characteristics

Health care services are generally categorized by three levels of treatment: primary care includes routine procedures like physical examinations, vaccinations, and treatment of minor injuries or illness on an out-patient basis; secondary care includes more major medical procedures and treatment for more serious illnesses which may require short hospitalizations; tertiary care is the most specialized level of care where major surgery or other technical clinical procedures are required, such as open heart surgery, organ transplants, or radiation therapy.

Most of the Navy's health care resources go into providing primary medical and dental care to active duty personnel, active duty dependents, military retirees and their dependents, and the survivors of deceased military personnel. The system operates as a cross between a health maintenance organization and a regular health insurance program as might be provided by a civilian company to its employees. For the active duty personnel, the system provide comprehensive care including treatment of major medical problems at no charge. Active duty personnel get preferential treatment in all military clinics and hospitals and must be provided with transportation to and from all medical appointments. The level of care available to all other eligible personnel is not as comprehensive. They are seen on a space available basis at all military medical facilities and are not allowed to take advantage of certain programs. Also, certain specialized care, particularly in pediatrics or geriatrics, are not always available at Navy primary care centers. In this case, people most often seek treatment at the Naval Hospital or from civilian practitioners.

REGIONAL CONTEXT

Relationship to Other Functions

The health care functional system provides support to all other functional systems in that all Navy personnel use health care services. Only a few functional systems provide support to the health care system; these are shown on Table HC-1. The housing functional system has been included because Navy housing should be put in locations where health care facilities are accessible via public transportation.

Table HC-1: Relationship of Health Care to Other Functional Systems

<u>Functional Systems</u>	<u>Affected Activity</u>	<u>Type of Support Provided (P) or Received (R)</u>
Supply	NAVHOSP Oakland	R - Limited material support
Facilities Maintenance	NAVHOSP Oakland (branch clinics at all other Activities)	R - Buildings and grounds maintenance
Housing	All Activities as well as Navy personnel living in the civilian community	R - Medical services for active duty dependents, retirees and their dependents, and survivors of deceased military personnel
Ground Access	All Activities	R - The ground access system allows people to get from their duty stations to the NAVHOSP Oakland when military transport is unavailable

Relationship to the Civilian Community

Emergency Care. The Naval Hospital occasionally provides emergency services for residents of the adjacent community. Emergency air ambulance facilities are available via a recently completed helicopter landing pad at the northwest corner of the Naval Hospital grounds. Helicopter flight operations at the helipad vary with the need, and range from a level of several per week, to several per year. All Navy Activities in the Bay Area either have designated helicopter landing pads, or are located in areas where helicopter landing is possible.

The Marine Corps Air Reserves have used their aircraft in practice exercises with civilian hospitals regarding simulated emergency medical response. In the event of a natural disaster, the military air ambulance capability is part of the response network to provide transport of injured persons, whether military or civilian. For example, in 1982 helicopters from the Naval Air Station Lemoore provided some of the first relief transport after the earthquake in Coalinga, California.

American Red Cross. The American Red Cross provides assistance to families of persons who are undergoing medical care at the Naval Hospital. The Red Cross has a building on the hospital grounds and Red Cross volunteers assist with financial and living arrangements for dependents of military personnel.

Disaster/Contingency Preparedness. The Commander Naval Medical Command Northwest Region coordinates the health care aspects of disaster preparedness planning for the Navy in the Bay Area. Also, the Naval Hospital and each clinic have their own plans regarding response to disasters. These Navy plans are coordinated via the Federal Emergency Management Agency with the County and the State of California and Office of Disaster Preparedness.

On a region-wide basis, public and private hospitals designate a number of beds that they will make available for military contingency use. The number of beds specified is voluntary.

OPERATIONAL ELEMENTS

Chain of Command

In 1983 Naval medical functions were reorganized to include a new authority with responsibility for coordinating medical and dental services at a regional level. The San Francisco Bay Area is included in the Naval Medical Command - Northwest Region (NAVMEDCOM NWREG) which extends south to Monterey, north to Alaska, and east to Fallon, Nevada. The NAVMEDCOM NWREG implements COMNAVMEDCOM policy and allocates medical resources for this entire region. The NAVMEDCOM NWREG has its headquarters at the Naval Hospital in Oakland.

Under the NAVMEDCOM NWREG are commands responsible for health care services at the subregional level. In the Bay Area there are two such commands: the Naval Regional Dental Clinic and the Naval Hospital (NAVHOSP) Oakland. NAVHOSP Oakland commands operate a single hospital for treating major medical problems, as well as branch clinics at most activities to handle routine medical procedures, industrial health care, and preventive medicine (which includes disease vector control, pest control, and other public health issues). The Regional Dental Clinic has

its headquarters at NAVSTA Treasure Island and operates clinics at most activities. Table HC-2 shows which activities have branch dental, medical, and industrial clinics. Each clinic has an officer-in-charge who reports to the commanding officer of the Naval Hospital or the Naval Regional Dental clinic. The commanding officer then reports to NAVMEDCOM NWREG.

Service Delivery System

Branch Clinics. The branch clinics, located at most major Navy Activities, are the backbone of the Navy's health care system in that they provide primary outpatient services for all eligible personnel. The clinics provide primary health care, including physical examinations, routine laboratory tests, preventive medicine, and referrals for specialized medical treatment. Bigger clinics have pharmacy and lab facilities.

All clinics are staffed by trained medical personnel. At a minimum, each clinic is assigned one medical doctor who is a general practitioner. Depending on the clinic's size, other specialists, like optometrists, pediatricians, and psychiatrists may be either on the staff or available for consultation on a regular basis. For example, the branch clinic at NAS Alameda has specialists in internal medicine, pediatrics, and general medicine on the staff. Special clinics including psychiatry, orthopedics, and obstetrics/gynecology are offered either weekly or several times a month. If an individual requires specialized care not available at the branch clinic, he or she must go to the Naval Hospital in Oakland. The Navy will pay for eligible personnel to see a civilian specialist if the Navy cannot provide the appropriate services, in an emergency, or through CHAMPUS (see CHAMPUS section).

Most clinics in the Bay Area are fully staffed five days a week during normal business hours. Only the NAS Alameda clinic has evening hours and only NAS Moffet Field has a 24-hour urgent care facility staffed by an MD. In the event of an emergency during off-hours, most clinics have Hospital Corpsmen on duty who can apply first aid and/or call an ambulance. In life threatening emergencies people are always taken to the closest hospital. For urgent care, patients are taken, by ambulance, to the Naval Medical Hospital. Some activities, like NAVSTA Mare Island, are equidistant to the Navy Hospital and other military hospitals. In this case, the patient can choose the hospital.

Industrial Health and Preventive Medicine Departments. In addition to the regular medical branch clinics, activities with large industrial facilities have Industrial Health Clinics that provide physical examinations and treat job related injuries or illnesses for both military and civilian personnel working at the facility. These clinics also handle industrial hygiene, including occupational health and safety issues, as specified by the Federal Occupational Health and Safety Act (OSHA). Larger activities also have Preventive Health Departments. These units are concerned with controlling disease transmitted through insects, rodents, food, etc., and function much like the Public Health Department in any city. Activities with Industrial Health Clinics and Preventative Health Departments are shown on Table HC-2.

Dental Clinics. Navy dental clinics are equipped for general practice, and sometimes include one or more specialties. Although the dental clinics are in a separate command from the medical clinics, they are generally located in the same buildings as the medical clinics. Table HC-2 shows which activities have dental clinics. Unlike medical care, dental services are only provided for active duty personnel. The exception to this rule is when dental work is required as part of an overall medical treatment plan.

Table HC-2: Regional Medical Functions in Relation to Naval Shore Activities

FUNCTIONS						
ACTIVITIES	Hospital Level Care	Medical Clinics	Industrial Clinics	Naval Reserve Med/Dent	Dental Clinics	Preventive Health Depts
NAVSECGRUACT Skaggs Island		X			X	
NSA Mare Island			X			
NAVSTA Mare Island		X			X	X
NAS Alameda		X	X	X	X	X
NAVHOSP Oakland	X	X		X	X	
PWC SFB						
NAVSTA Treasure Island		X			X	
NSC Oakland			X			
WPNSTA Concord		X			X	
NAS Moffett Field		X			X	X
NALF Crows Landing		X			X	
NAVCOMMSTA Stockton		X	X ¹		X ¹	
NAVRESCTR San Bruno				X		

NOTE:

1. The branch clinic performs all three functions.

Naval Hospital Oakland. The Naval Hospital Oakland is a major medical facility capable of providing secondary and tertiary care. In addition to its 650-bed inpatient building, the hospital has numerous clinics and labs to perform a wide range of patient care services. These include many specialized treatment programs, such as neuro-surgery, thoracic and cardiovascular surgery, and prosthesis. In addition, the Hospital has an oncology program which provides clinical care as well as conducting research in areas having particular significance for personnel in the Armed services.

Most services at the Hospital are available by appointment. However, it also has a walk-in urgent care clinic that functions much like the other branch clinics in the Region.

Beyond its role as a regional medical center, Naval Hospital Oakland also provides technical and administrative support to its branch clinics. The type of support offered ranges from providing and coordinating medical specialists who visit the branch clinics on a regular basis to automated data processing. The Hospital also handles all budget funds and personnel issues for the Branch clinics. The Hospital commanding officer works closely with the Officers in Charge (OICs) at each clinic to maintain the level of health care the clinics provide and to ensure good communications throughout the system.

CHAMPUS. The Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) provides eligible personnel with health care through private medical facilities, either when military facilities do not provide the necessary services or the space is not available for treatment. CHAMPUS covers only major medical problems, not elective procedures. When receiving CHAMPUS funds, the patient is required to pay a deductible charge which varies in amount depending on rank. Also, CHAMPUS will only cover 75 percent of the allowable charge. Active duty dependents and retirees have the option to use CHAMPUS for outpatient primary care whenever they choose. However, to use CHAMPUS for specialized treatment and inpatient care, all eligible personnel must receive a pre-approval from the Naval Hospital. CHAMPUS is a very expensive program for DOD and recent changes in the regulations have tightened up the rules concerning when CHAMPUS can be used.

Fleet Health Services. Active duty personnel stationed on ships berthed in the San Francisco Bay Region also require medical services. Big ships, like aircraft carriers, have a full medical unit including doctors on board who can treat most problems. The smaller ships have a Hospital Corpsman who will refer the problem to a branch clinic if it is beyond his treatment capability. The branch clinic at NAS Alameda is where most active duty personnel assigned to ships go for initial medical care. If specialized services are required, the doctors at the branch clinic will make the appropriate referrals.

Tri-Service Medical System. In recent years, there has been considerable pressure on DOD to eliminate redundancy in services provided by all branches of the military. As part of this initiative the health care systems from all three service branches have been integrated into a Tri-service medical program. All military personnel can use medical facilities at any Military Activity. Also, when hospitals serving different branches of the service are located in close proximity, resources are allocated between them so that there is no unnecessary overlap in staff or equipment. For example, if Letterman Army Hospital in San Francisco has an expensive piece of special equipment, the Naval Hospital in Oakland will not be allowed to purchase the same equipment, but instead, will refer people to Letterman for the appropriate procedures.

Service Delivery Capacity

The capacity of the health care system, from the branch clinics to the hospital, is measured primarily by two factors: length of patient waiting time for an appointment, and the number of patient visits at a facility vis a vis the size of the staff and the building. Patients should not have to wait more than 24 hours to get an appointment with a general practitioner. If waits are generally longer than this amount of time, the facility may be too small. Also, the facilities planning criteria defined by NAVFACENGCOM specify allowable clinic sizes based on the number of current and projected patient visits. The total number of active duty personnel, active duty dependents, retiree and retiree dependents are used in calculating the number of patient with a facility is expected to receive.

The physical condition and design of a facility can also affect its capacity. For example, Naval Hospital Oakland was built during World War II when there was a much greater emphasis on inpatient health care. Since that time the practice of medicine has changed dramatically with current practices now favoring more outpatient care. As a result of this change, the Hospital has excess inpatient capacity but its outpatient clinics do not have sufficient space. Most of the clinics suffer from the same problem with small obsolete facilities. The only branch clinic currently being upgraded is at NAVSTA Mare Island where a new facility is under construction and should be completed by summer of 1985.

System Evaluation

In the last several years quality control has almost entirely supplanted productivity as the number one evaluation priority in the Navy health care system. The hospital commanding officer has a special assistant for quality assurance and all branch clinics have a quality assurance/risk management committee. These committees are responsible for seeing that all clinic procedures are being followed and that patients are receiving the appropriate treatment plans. Another method clinics use to evaluate their services is to conduct patient satisfaction surveys. Most clinics conduct these surveys on a regular basis to determine whether they are meeting their patients' needs.

Health Care Planning

Facilities Planning. Plans to either rehabilitate existing facilities or build new ones are initiated differently depending on the type of facility involved. Hospitals are sized according to two factors: size of the eligible population within a 50 mile radius of the facility and projected number of patient visits. Branch clinics are also sized using the same factors as hospitals. However, the impetus for expanding on branch clinic usually comes from a planned increase in base loading at the host Activity. Population data and base loading information are generally provided on an annual basis from the Bureau of Medicine (BUMED).

Manpower Planning. Manpower requirements at medical facilities are also determined based on the population served and number of patient visits. Any permanent increase in staffing requires an increase in the number of billets available.

Manpower authorizations are reviewed annually. If a branch clinic anticipates increased base loading at its host command, it can use the manpower review as a vehicle for requesting more staff. Base loading data is used by the Manpower Management Department at the Hospital to calculate what type of new staff positions will be required.

OPERATIONAL ANALYSIS

Service Delivery

Regional Consolidation. There have been two recent regional consolidations in the Navy health care delivery system. One was the 1983 reorganization of NAVMEDCOM NWREG and the Hospital. Under the new system the clinics report to the Hospital instead of having their own command which would report directly to the NAVMEDCOM NWREG. This reorganization has had advantages and disadvantages for the branch clinics. Clinic staff indicate that being under the Hospital's purview gives them access to more resources, including the visiting specialist program and better lab facilities. The system also allows for a more efficient allocation of resources because funds are not being spent on duplicated systems. Thus more money is available for strengthening existing services.

But even with these benefits, there are drawbacks to consolidation. A major problem has been coordinating the branch clinics with each other and with the hospital. Coordination is currently done by a special assistant to the hospital commanding officer. He has no staff and no clearly defined areas of responsibility. There are two alternative solutions to this program. One is to create a new directorate position at the Hospital for the regional clinic coordinator who would be responsible for medical clinics, occupational health clinics, and the preventive medicine departments. The other alternative is to put the clinics in a separate chain of command reporting directly to NAVMEDCOM NWREG.

Another negative aspect of consolidation is that clinics have little control of their staffs. If the Hospital decides two hospital corpsmen are needed on a temporary basis at NAS Alameda, these corpsmen can be transferred from another clinic in the system without approval of their OIC.

Another problem with the regional system that results from its size more than its administrative structure is the distance between most branch clinics and the Hospital. People requiring secondary or tertiary care often spend a considerable amount of time traveling back and forth to the Hospital. Also, the Hospital is not easily accessible by public transportation. Although activity has a van going back and forth to the Hospital at least twice a week, people whose appointments do not coincide with the vans' schedules have some difficulty getting to the Hospital. This problem is acute for active duty dependents, especially if small children are involved.

The other form of consolidation that has affected Navy health care is the tri-service medical system. For the most part, this arrangement is satisfactory. However, one clinic OIC was concerned about different service branches having different medical requirements because their missions are very different. In a national emergency, the different branches might not be able to properly treat each other's casualties.

Quality of Care. The quality assurance/risk management committees, as well as the patient satisfaction surveys, indicate that the Navy health care system is providing adequate primary care to its users. The only area in which the system seems weak is its ambulance drivers. Ambulance drivers are highly trained people who must practice frequently to be proficient in an emergency. Although Navy ambulance

drivers are all properly trained, they often do not get enough practice to be fully prepared to handle all emergencies.

System Capacity

Current Capacity. Capacity utilization at the branch clinics is highly variable. However, most clinics are operating below their maximum level. The major exception is the clinic at NAS Moffett Field. Several factors account for the clinic's crowded conditions, even though it is less than ten years old. First, NAS Moffett Field is centrally located for a very large population of both active duty and retired military personnel, including 4,000 active duty people at the Sunnyvale Air Force facility. Second, the clinic is much more convenient than the Hospital, so people use it as if it were a hospital. Third, people come to NAS Moffett Field's clinic from long distances because the quality of care is good. It has a doctor staffing the 24 hour urgent care facility, and the pharmacy has a fast turn-around time. The popularity of this clinic has negative side effects, particularly for the active duty dependents. Approximately 70 percent of the case load at the NAS Moffett Field clinic are retirees. These people tend to be very aggressive about seeking health care and often end up squeezing out the active duty dependents who may have more difficulty getting to the clinic because of jobs or difficulty finding child care. Unfortunately there are insufficient funds in the system to enlarge the clinic to the size it should be to serve the entire eligible population.

In contrast to the situation at NAS Moffett Field, the clinic at NAS Alameda is very underutilized given the size of population it serves. The reasons why so few people use the clinic are unclear, particularly because patient satisfaction surveys are very positive. The most plausible explanation is that because the Hospital is so close, people tend to go there directly instead of going to the clinic first and waiting for a referral to a specialist.

The industrial health clinics also have capacity problems. Although the military is exempt from OSHA standards, DOD and the Navy recognize the importance of these regulations and have been trying to comply with them on a voluntary basis. The problem is that the program lacks adequate funds to execute all the necessary work. A major deficiency has been the inability to find good occupational health physicians to work for the Navy because government salaries are not commensurate with what could be earned in a private practice.

Projected Capacity. When the new clinic is completed at NAVSTA Mare Island, it will consolidate all of the medical services, including the dental clinic, into one facility. This will not only make the service delivery system more convenient for patients, but will ensure that the clinic has adequate capacity to handle the current and projected number of patient visits.

The branch clinic at NAVSTA Treasure Island is also scheduled to receive a new building with construction starting in FY 87. A new facility is considered necessary because NAVSTA Treasure Island will be expected to absorb the major impacts from the proposed homeporting plan. A requisition has also been submitted to the manpower management department for additional staff positions.

No other new clinic buildings are currently programmed for construction. However, there are long range plans to replace the clinic at NAS Alameda. This clinic is needed, despite underutilization of the existing facility, because the building is antiquated, causing operational inefficiency. All other facilities appear to be adequate to absorb any anticipated increase in base loading at the host activities.

Health Care Planning

Both manpower and facilities planning require accurate data on current and projected base loading as well as the retiree population in given service areas. Without this information it is difficult to do reliable planning. In 1982 the BUMED stopped publishing the necessary reports because the formulas for determining the number of patient visits based on population data were being re-done. Since then, the hospital has had to rely on information from local activities for all planning efforts.

REGIONAL ISSUES AND OPTIONS

Issue 1: Regional consolidation has led to considerable improvements in the health care system but better system coordination is required between the branch clinics and the Hospital.

Options:

- (a) Maintain status quo.
- (b) Make clinic coordination a department at the Hospital to handle the branch clinics, the industrial clinics, and the preventive medicine departments.
- (c) Reorganize the branch clinics into a separate command that reports directly to the NAVMEDCOM NWREG rather than to the Hospital.

Issue 2: The industrial clinics are underfunded.

Options:

- (a) Maintain status quo.
- (b) Urge Congress to make occupational health and safety a high priority issue and appropriate additional funds for strengthening DOD's program.

Issue 3: The health care system lacks adequate data with which to plan for future manpower and facilities requirements.

- (a) Maintain status quo.
- (b) Wait for BUMED to begin publishing planning data again.
- (c) Develop a regional entity responsible for maintaining accurate current and projected base loading information for activities in the Bay Area as well as continuing to use DEERS or other data to count retirees, retiree dependents, and other personnel eligible for Navy health care benefits.

Issue 4: Because of the Region's size and the poor public transit connections between most activities and the Hospital, it is sometimes difficult for personnel to get to the Hospital.

Options:

- (a) Maintain the status quo.
- (b) Develop an intra-Navy shuttle bus system for getting people back and forth to the hospital that operates more frequently than the current hoc system of vans which are used to transport people.
- (c) Work with local transit districts to get other public transit service to the hospital.

Issue 5: Navy Ambulance drivers do not have enough experience handling all types of emergencies to maintain the necessary skills to handle all contingencies.

Options:

- (a) Maintain status quo.
- (b) Contract with civilian companies for ambulance services at all activities.
- (c) Provide more extensive training for ambulance drivers with routine refresher courses.

XVI. HOUSING

OVERVIEW

Objectives

The primary purpose of the Housing Functional System is to assure all Navy personnel and their dependents access to adequate shelter on an equal opportunity basis. Housing also plays an important role in fleet readiness, morale, job productivity and retention. Personnel living too far from their duty stations cannot mobilize quickly. Nor can personnel living in unsuitable conditions concentrate or feel good about their jobs, particularly if they are on extended deployment and out of daily contact with their families. And, as the Navy's technological sophistication increases with a concomitant increase in training, there is an enhanced need to retain personnel by offering, among other things, quality living conditions. All of these factors combined with the basic need for shelter are fundamental to maintaining Naval operations both afloat and ashore. The importance of these relationships have been recognized by members of the San Francisco Bay Regional Plan Executive Committee who have mandated that housing take a high priority in the Regional planning process.

General Characteristics and Operations of the Navy's Housing Program

The Navy operates two types of housing: married family housing (MFH) and unaccompanied personnel housing (UPH). All married personnel ranked E-4 with dependents or above with over two years of service are eligible to live in military operated family housing units. These units are generally single family houses or duplexes; however, multifamily buildings with six to twelve units are not unusual. All unaccompanied personnel are eligible for UPH quarters which resemble dormitories and generally include mess facilities.

Military personnel living in the civilian community receive a two part housing entitlement in addition to their basic pay. Basic Allowance for Quarters (BAQ) is given to all military personnel not occupying military housing and is varied only by rank, number of years in service and marital status. The Variable Housing Allowance (VHA) recognizes that military personnel face variable housing costs across the county and varies according to local housing prices as well as rank, number of years in service, and marital status. Within a large metropolitan area, like the San Francisco Bay Region, VHA is by location (zip code). Since VHA is allocated according to duty station, rather than place of residence, personnel stationed at Mare Island, for example, have a different housing entitlement than those stationed at Concord, even though these people may compete for the same civilian housing opportunities. Currently there is an \$800 cap on the amount of total BAQ and VHA married personnel can receive and a \$600 cap for personnel without dependents.

REGIONAL CONTEXT

Relationships to Other Functional Systems

Housing relates to all other functional systems in that personnel working at all shore establishment activities and assigned to ships require housing. Table HS-1 shows the particular functions that directly receive or provide support for housing.

Relationship to Civilian Community

Privately owned housing comprises a major part of the Navy's housing assets in the Region. Therefore, the price, quantity, and quality of this housing has a direct impact on the ability of the Navy to operate in the Region. This relationship has become problematic in the Bay Region because housing costs are very high. Navy personnel often have trouble finding affordable housing within an acceptable commute distance from their duty stations. Also, the cap on the total housing entitlement paid to military personnel limits even high ranking officers in their housing choices. A more detailed discussion of the civilian housing market and its impact on military personnel will be included later in this analysis.

OPERATIONAL ELEMENTS

Organization

Policy. Almost all Navy housing policy is made at the national level by the Department of Defense (DOD) and the Office of the Secretary of Defense (OSD), both of whom make decisions for all branches of the military. DOD also sets parameters for policy decisions which are made locally. For example, in 1980 the OSD took a position regarding military housing with very specific implications for the Bay Area Naval Establishment by stating that in urban areas the civilian community should provide housing to support the entire military housing requirement. This effectively postponed most military acquisition projects in urban areas, making it impossible for places like the Bay Area, which have large family housing deficits, to defend new projects. Housing conditions have changed considerably over the last four years and the OSD is considering reversing this decision in areas where a market study shows that the civilian community cannot support the military housing requirement.

Certain policy decisions concerning ongoing housing operation are made at the local level by each activity's Commanding Officer. In general Naval Facilities Engineering Command (NAVFACENGCOM) policy requires mandatory assignment of all incoming personnel to military family units if occupancy rates are consistently below 99 percent. But, if local conditions make this policy inappropriate, the Commanding Officer can request that NAVFACENGCOM grant his or her activity a waiver. OPNAV has a similar requirement for UPH in that mandatory assignment is in effect until UPH units have a 95 percent occupancy rate. These policies are intended to ensure that facilities are being fully utilized.

Table HS-1: Relationship of Housing to Other Functional Systems

<u>Functional System</u>	<u>Affected Activities</u>	<u>Type of Support Provided (P) or Received (R)</u>
Ground Access	All	R - Allows Navy personnel to move between their homes and their duty stations
Personnel Support	All	P - Personnel support services, including commissaries and exchanges, must be convenient to Navy housing or personnel will not utilize these services to their fullest extent
Facilities Maintenance	All	P - All Navy owned housing units must be adequately maintained
Health Care	NAVHOSP Oakland	R - The hospital provides acute medical care for all Navy personnel

Daily Operations. NAVFACENGCOM has overall responsibility for Family Housing; unaccompanied housing is under the cognizance of the Chief of Naval Operations (CNO). While NAVFACENGCOM monitors the UPH need at all activities through the housing survey process, the individual resource sponsor is responsible for initiating new construction programs when necessary.

Navy housing is operated on a daily basis by the Family Housing manager and UPH manager at each activity. The Family Housing manager's staff is primarily responsible for three functions. One is making referrals for Navy personnel seeking civilian housing and assigning eligible personnel to Navy family housing. Two is maintaining family housing units and handling tenant relations. Three, family housing staff conduct the annual housing survey (which includes UPH). The UPH manager only manages the UPH facilities. Unaccompanied personnel seeking housing referrals for civilian housing may use the Family Housing Office

Bay Area Regional Functional Relationships. When several activities are clustered together in geographic proximity, or where there is a Public Works Center, housing functions can be performed at a regional level rather than by individual activities. The administrative units created under these circumstances are called housing complexes. In the San Francisco Bay Region there are two housing complexes: the North Bay complex and the Central Bay, San Francisco complex. The former comprises NAVSECGRUACT Skaggs Island, NAVSTA, Mare Island, and WPNSTA Concord. These three activities are only linked together for the Housing Survey process. All other functions, including assignment to military housing, are performed independently.

The Central Bay, San Francisco housing complex is administered by the Public Works Center San Francisco Bay, Oakland (PWC). All housing units at PWC client commands are owned and operated by the PWC. Housing referrals and assignments are done from the HFH office at NAS Alameda. Also, the housing survey results are compiled in aggregate for the entire complex. Facilities maintenance is operated through PWC. The Commanding Officer at the Public Works Center is the Housing Authority for the Central Bay complex.

In addition to the intracomplex relationship between activities in the North and Central Bay San Francisco housing complexes, there is extensive informal intercomplex cooperation. All housing offices in the two complexes serve the same population since eligible personnel assigned to a duty station at any North or Central Bay activity can live at any other activity in either housing complex. Often personnel seeking family housing will assess the waiting list at each activity for the type of unit they require and will sign up on the shortest list or on more than one list. NAVSECGRUACT Skaggs Island, because of its remote location, gives housing priority to personnel who work on station. Since there are only a few units at Skaggs Island, this policy effectively prohibits all but Skaggs personnel from living at that activity. Army personnel have priority for housing at the Oakland Army Base even though these units are owned by PWC. Housing referral staff at both complexes also work together to help Navy personnel find affordable civilian housing wherever it is available.

NAS Moffett Field and NAVCOMMSTA Stockton are too far away from other activities to be included in a housing complex. However, housing units at these activities do serve a regional housing need in that Navy recruiters and reserve personnel who are not stationed at either activity but work nearby, are eligible for military housing and live at these activities (recruiters and reserve personnel are eligible for military housing at all activities in the Region.) For purposes of this analysis, NAS Moffett Field and NAVCOMMSTA Stockton will each be referred to as a housing complex.

All personnel beginning a tour of duty in the San Francisco Bay Region are instructed to report with the Family Housing Office at the activity where they will be stationed. Personnel can discuss housing requirements with a counselor and obtain whatever housing referral information is available. Then personnel are responsible for finding civilian housing and signing up on the military housing waiting lists if they are eligible.

Housing Planning

The Family and Unaccompanied Personnel Housing Survey Process. The Navy housing program's basic planning tool is the family and unaccompanied personnel housing survey which determines the projected housing demand created by its personnel and the housing supply available to meet this demand. While the survey actually collects data about all personnel, whether or not they are married and eligible for family housing, the primary goal of the process is to provide information about eligible family and UPH housing demand.

The method used for calculating family housing demand is as follows. First, the total numbers of eligible enlisted and officer families are added together to obtain the "Gross Eligible Housing Requirement." DOD regulations specify that the Navy can only build to 90 percent of its gross housing requirement; this total is the "program limit."

Next, the total housing supply is computed. This entails adding together all military units and privately owned housing occupied by military personnel that are considered "adequate" according to DOD standards. These standards are: rent or house payments should not exceed 115% of combined BAQ and UHA entitlements; the distance from home to duty station must not exceed a one hour commute in a private car during rush hour; all units must have private kitchens, bathrooms which can be entered without going through a bedroom, and bedroom composition appropriate to family size; and units must be well constructed, in good condition, and located in residential areas not subject to objectionable industrial characteristics. Then, total housing supply is subtracted from the program limit. If the difference between the two is a positive number, there is deficit, meaning that housing supply is not adequate to meet the demand. However, if the difference is a negative number, there is a "negative" deficit (surplus) because supply exceeds demand. It is assumed that a housing deficit represents the number of families inadequately housed or involuntarily separated.

The UPH demand is calculated in a similar manner. The total effective UPH requirement consists of the total unaccompanied permanent party who are assigned to an activity plus the average number of transient and potential personnel (students or other personnel not permanently assigned to the activity). Again the 90 percent factor is applied to calculate the program limit. Then military and privately owned housing occupied by unaccompanied military personnel are added together to calculate the activity's total UPH assets. However, unlike family housing, UPH assets include both adequate and substandard military housing because it is assumed that all substandard units can be rehabilitated.

Military Construction. Funds for both building and operating family housing are appropriated each year as part of the Navy's Military Construction (MILCON) budget. This makes family housing unique for two reasons. One, it is the only NAVFACENGCOM division that is funded through MILCON except for NAVFACENGCOM's own facilities requirements. Two MILCON funds are usually used only for capital construction projects; however, the family housing line item includes operating costs as well as funds for new construction. NAVFACENGCOM submits its acquisition program 5 years in advance of the time they expect the money to be appropriated. MILCON budget requests are submitted to Congress two years before funds are actually appropriated. Therefore, the Housing Survey is used to project housing demand five years out from the current fiscal year. If a deficit is anticipated, there will be adequate lead time to request funds for new acquisition. However, the budget process is very uncertain; program requests can go through the entire five year cycle and still be dropped at the last minute. This means that there is a very long lead time and a great deal of uncertainty for all new acquisition programs.

Site Selection. When funds are allocated or "programmed" for acquisition the local NAVFACENGCOM Engineering Field Division (EFD) is responsible for site selection. This can involve an in-depth study of site alternatives where a list of all the possible sites within a certain area is completed. These sites are then ranked using a number of weighted factors including size, ownership characteristics, topography, etc. After the initial ranking, sites with the highest scores are subject to a more intensive engineering analysis, resulting in a final site selection.

Housing Demand

Family Housing. According to the housing survey procedure, the program deficit is considered the Navy's unmet housing demand. The projected housing demand in the San Francisco Bay Area for FY 88 (based on the calendar year 1983 survey results) is shown for each housing complex in Tables HS 2A-2D. The North Bay complex has the only anticipated surplus (a negative number represents a surplus). However, all four complexes have a shortage of one and two bedroom units for enlisted personnel. As Table HS-2B shows, the Central Bay, San Francisco complex has the largest deficit with 36 percent of the families eligible for Navy housing living in inadequate units. Over 90 percent of these are families of enlisted personnel. Table HS-2D shows also that 15 percent of eligible personnel stationed at NAVCOMMSTA Stockton live in inadequate housing.

Preliminary results from the 1984 calendar year survey are shown in Table HS-3. The large surplus in last year's projections for the North Bay complex has dropped to only 100 units due to all inadequate units finally being removed from the adequate assets category. In the Central Bay, San Francisco the deficit has also decreased by 656 units. The reason for this large decrease is unclear; however, it is not unusual for survey results to fluctuate considerably from year to year. NAS Moffett Field shows a large increase in its deficit even though 170 new Navy housing units were completed last year. The reason for this increase is that two new squadrons were assigned to Moffett Field last year. The situation at NAVCOMMSTA Stockton is not expected to change significantly through FY 89. Table HS-4 shows the projected Navy housing demand in the Bay Region developed from the housing surveys done over the last five years. Although demand does fluctuate; over the long run, it has remained fairly constant.

The above projections are based on current Naval operations in the San Francisco Bay Region and do not reflect the impact of the proposed Strategic Homeporting Plan, which could bring as many as nine new ships into this area. The Central Bay, San Francisco Housing complex is expected to absorb the resultant increase in housing demand. Table HS-5 shows the assumptions used in calculating what this increased demand would be. According to this scenario, 236 eligible families would be coming to the Bay Area by 1990. Assuming that none of these families will find adequate housing, since there is already a deficit of over 2,000 units, the Central Bay's programming deficit in 1990 is expected to approximately double. This does not include ineligible families or any other growth in military population that could occur in the Region.

UPH. The UPH program deficit for FY 88 is shown in Table HS-6. Column (g) indicates the deficit as calculated by NAVFACENGCOM where inadequate units are counted. According to this column, the North Bay complex is the only location within a UPH deficit and the region as a whole shows a surplus of 1,897 units. However, if the deficits are re-calculated, as shown in Column (h), eliminating inadequate units as assets, only NAVSECGRUACT Skaggs Island and NAVCOMMSTA Stockton have a UPH surplus. All other activities have deficits. This procedure reveals a deficit which is 96 units larger than the NAVFACENGCOM calculated surplus.

Current Housing Supply

Family Housing. In 1983 there were 4,032 units of Navy owned family housing occupied by Navy families in the San Francisco Bay Region. Additional Navy owned units were occupied by personnel in other branches of the military, including the

TABLE HS-2A: North Bay Complex Housing Demand Projection to FY88

	Gross Effective Requirement	Program Limit	Military Owned Units	Civilian Owned Units	Housing Total	Program Deficit
Officer						
# of Bedrooms						
1 & 2	127	109	21	64	85	24
3	65	62	100	42	142	-80
4 or more	36	34	40	30	70	-36
Total	228	205	161	136	297	-92
Enlisted						
# of Bedrooms						
1 & 2	1094	925	252	687	939	-14
3	394	394	366	296	662	-268
4 or more	203	203	88	188	276	-73
Total	1691	1522	706	1171	1877	-355
Total Deficit						-447

Source: FY85 Navy Family Housing Survey

TABLE HS-2B: Central Bay Complex Housing Demand Projections to FY88

	Gross Effective Requirement	Program Limit	Military Owned Units	Civilian Owned Units	Housing Total	Program Deficit
Officer						
# of Bedrooms						
1 & 2	681	590	52	309	361	229
3	399	375	266	172	438	-63
4 or more	256	237	129	87	216	21
Total	1336	1202	447	568	1015	187
Enlisted						
# of Bedrooms						
1 & 2	4493	3798	295	1303	1598	2200
3	1622	1622	1231	350	1581	41
4 or more	839	839	510	85	595	244
Total	6954	6259	2036	1738	3774	2485
Total Deficit						2672

Source: FY85 Navy Family Housing Survey

TABLE HS-2C: NAS Moffett Field Housing Demand Projections to FY88

	Gross Effective Requirement	Program Limit	Military Owned Units	Civilian Owned Units	Housing Total	Program Deficit
Officer						
# of Bedrooms						
1 & 2	315	272	0	224	224	48
3	172	163	66	97	163	0
4 or more	100	93	25	26	51	42
Total	587	528	91	347	438	90
Enlisted						
# of Bedrooms						
1 & 2	1242	1052	296	856	1152	-100
3	437	437	228	203	431	6
4 or more	221	221	24	97	121	100
Total	1900	1710	548	1156	1704	6
Total Deficit						96

Source: FY85 Navy Family Housing Survey

TABLE HS-2D: NAVCOMSTA Stockton Housing Demand Projection to FY88

	Gross Effective Requirement	Program Limit	Military Owned Units	Civilian Owned Units	Housing Total	Program Deficit
Officer						
# of Bedrooms						
1 & 2	8	7	0	3	3	4
3	5	5	2	1	3	2
4 or more	3	3	1	5	6	-3
Total	16	15	3	9	12	3
Enlisted						
# of Bedrooms						
1 & 2	95	80	29	43	72	8
3	35	35	8	25	33	2
4 or more	19	19	3	6	9	10
Total	149	134	40	74	114	20
Total Deficit						23

Source: FY85 Navy Family Housing Survey

Table HS-3: Preliminary Projected Program Deficit by Housing Complex FY 89

North Bay	
Officer	-79
Enlisted	-21
Total	-100
Central Bay San Francisco	514
Officer	1,498
Enlisted	
Total	2,012
NAS Moffett Field	
Officer	06
Enlisted	448
Total	544
NAVCOMMSTA Stockton	
Officer	—
Enlisted	25
Total	25

Source: FY86 Navy Family Housing Survey.

TABLE HS-4: Navy Gross Effective Housing Requirement FY80-FY85

Complex	FY81	FY82	FY83	FY84	FY85
North Bay	2,212	1,906	2,069	2,342	2,367
Central Bay San Francisco	8,801	7,652	6,538	9,111	10,284
NAS Moffett Field	2,925	3,429	2,774	2,955	2,828
NAVCOMSTA Stockton	206	224	212	178	180
TOTAL	14,144	13,211	11,593	14,586	15,659

Source: FY81-85 Navy Family Housing Survey

TABLE HS-5: Homeporting Impact on Family Housing Requirement FY89

Activity	Component Total		Marital Factor		Eligible Households		Total Households
	Off.	Enl.	Off.	Enl.	Off.	Enl.	
NAS							
Alameda	167	2,113	69.3%	44.5%	116	940	1,056
NAVSTA							
Treasure Island	151	2,192	69.3%	44.5%	105	975	1,080
						Total Families	2,136

Source: WESTNAVFACENGCOM

TABLE HS-6: Unaccompanied Personnel Housing Demand By Complex Projections to FY88

Activity	(a) Program Limit	(b) Adequate Military Units	(c) Substnd Military Units	(d) Total Military Units	(e) Private Housing	(f) Housing Total	(g) Navy Program Deficit	(h) Program Deficit Excluding Inadequate Units
MAS Alameda								
Officer	187	0	149	149	95	244	(57)	92
Enlisted	1,463	0	1,634	1,634	243	1,877	(414)	1,220
Total	1,650	0	1,783	1,783	338	2,121	(471)	1,312
MAVHOSP								
Oakland								
Officer	193	0	0	0	136	136	57	57
Enlisted	516	308	39	347	24	371	145	184
Total	709	308	39	347	160	507	202	241
MSC Oakland								
Officer	83	0	0	0	27	27	56	56
Enlisted	260	0	0	0	20	20	240	240
Total	343	0	0	0	47	47	296	296
MAVSTA								
Treasure Island								
Officer	105	360	0	360	31	391	(286)	(286)
Enlisted	1,021	1,675	1,624	3,299	71	3,370	(2,349)	(725)
Total	1,126	2,035	1,624	3,659	102	3,761	(2,635)	(1,011)
Central Bay Total	3,828	2,343	3,446	5,789	647	6,436	(2,608)	838
MAVSTA								
Mare Island								
Officer	186	16	26	42	86	128	58	84
Enlisted	2,293	1,413	76	1,489	262	1,751	542	618
Total	2,479	1,429	102	1,531	348	1,879	600	702
WPNSTA								
Concord								
Officer	12	0	0	0	18	18	(6)	(6)
Enlisted	331	0	158	158	25	183	148	306
Total	343	0	158	158	43	201	142	300
MAVSECGRUACT								
Skaggs Island								
Officer	5	0	0	0	5	5	0	0
Enlisted	87	99	0	99	35	134	(47)	(47)
Total	92	99	0	99	40	139	(47)	(47)
North Bay Total	2,914	1,528	260	1,788	431	2,219	695	955
MAS Moffett								
Field								
Officer	293	0	176	176	201	377	(84)	92
Enlisted	1,824	1,392	0	1,392	253	1,645	179	179
Total	2,117	1,392	176	1,568	454	2,022	95	271
NAVCOMHSTA								
Stockton								
Officer	7	1	8	9	7	16	(9)	(1)
Enlisted	70	111	0	111	29	140	(70)	(70)
Total	77	112	8	120	36	156	(79)	(71)
TOTAL FOR REGION							(1,897)	1,993

Source: FY85 Navy Unaccompanied Personnel Housing Survey

Coast Guard. Table HS-7 shows the distribution of Navy MFH occupied units by complex and bedroom composition. As column (c) shows, almost 62 percent of the officers' units and 55 percent of the enlisted personnel units are in the 3 bedroom category. When compared with the total program deficits shown in column (g), it becomes apparent that there is a mis-match between the current supply of Navy military MFH units and the demand. This does not mean that 3 bedroom units are standing vacant while there are long waiting lists for the smaller units; these units are all occupied. It only means there is an inefficient use of existing housing resources according to DOD standards.

After a five year hiatus, new family housing acquisition has been programmed for the Bay Area starting in FY 88. The current program projects constructing 300 units in the Central San Francisco Bay complex area. An additional 300 units have been programmed for FY90.

There are two factors which could alter the acquisition program for the Central San Francisco Bay by a considerable amount. One is the impact of the proposed Homeporting Plan, which has not yet been included in this Region's housing survey calculations. The exact impacts of the Plan will not be known until the Plan is finalized sometime next year. A second factor that could increase the acquisition program is an apparent willingness of the OSD to consider programming new family housing in metropolitan areas where a market study shows a justifiable need.

UPH. UPH facilities in the San Francisco Bay Region included a total of 9,265 units in 1983. As shown in Table HS-8, 736 or 8 percent of these units were for officers and 8,529 or 92 percent were for enlisted personnel (including both adequate and inadequate units). When compared with the UPH program deficit for the Region, the supply of units for officers and enlisted personnel matches demand relatively well. There is only a 4 percent difference between demand and supply. This indicates that while there is a large deficit of UPH accommodations in the Region, what does exist is fairly well matched to demand. Data on the UPH new construction program is not available at this time.

Privately Owned Housing. Because DOD counts privately owned housing in its housing survey, civilian housing supply is an important part of this functional analysis. Table HS-9 shows the number of Navy personnel eligible for military family housing who live in private houses. The survey results indicate that of these families, about 68 percent own their own homes. Unaccompanied personnel living in civilian housing are shown in Table HS-10. These tables do not give a total count of the military personnel living in privately owned homes because accurate data on ineligible families, families living in private inadequate housing, or groups of unaccompanied personnel sharing housing are not available.

Examining housing supply as a function of how many units actually exist in the Region is meaningless without looking at how many units are vacant and available for occupancy. In an area where there is a low vacancy rate, units are in short supply regardless of the total number of existing units. As a result, people have fewer choices when seeking housing in terms of price or size of units and are often forced to live in overcrowded and/or overpriced units. Low vacancy rates also tend to constrict mobility in the housing market. If additional units are not available, people already living in an area tend to move less frequently, which means there is less turnover and thus less flexibility in the housing market. The Association of Bay Area Governments (ABAG) considers 4.5 percent as an optimal vacancy rate. At this level there is adequate opportunity for housing mobility for consumers, and real estate

TABLE HS-7: Navy Family Housing Supply By Bedroom Composition by Complex 1983

Number of Bedrooms	(a) North Bay Complex	(b) Central Bay Complex	(c) NAS Moffett Field	(d) NAVCOMSTA Stockton	(e) Total	(f) Percent Total	(g) Total Deficit	(h) Percent Total Deficit
Officer								
1&2	21	52	0	0	73	10.4%	305	92.7%
3	100	266	66	2	434	61.8%	-141	
4 or more	40	129	25	1	195	27.8%	24	7.3%
Total	161	447	91	3	702	100.0%	188	100.00%
Enlisted								
1&2	252	295	296	29	872	26.2%	2094	88.2%
3	366	1231	228	8	1833	55.0%	-219	
4 or more	88	510	24	3	625	18.8%	281	11.8%
Total	706	2036	548	40	3330	100.0%	2156	100.00%
TOTAL	867	2483	639	43	4032			

Source: FY85 Navy Family Housing Survey

TABLE HS-8: Unaccompanied Personnel Housing Supply By Complex 1983

Activity	Officer			Enlisted			Total
	Adequate	Substd	total	Adequate	Substd	total	
NAS Alameda	0	149	149	0	1,634	1,634	1,783
NAVHOSP							
Oakland	0	0	0	308	39	347	347
NSC Oakland	0	0	0	0	0	0	0
NAVSTA							
Treasure Island	360	0	360	1,675	1,624	3,299	3,659
Central Bay Total	360	149	509	1,983	3,297	5,280	5,789
NAVSTA							
Mare Island	16	26	42	1,413	76	1,489	1,531
WPNSTA							
Concord	0	0	0	0	158	158	158
NAVSECGRUACT							
Skaggs Island	0	0	0	99	0	99	99
North Bay Total	16	26	42	1,512	234	1,746	1,788
Nas Moffett							
Field	0	176	176	1,392	0	1,392	1,568
NAVCOMSTA							
Stockton	1	8	9	111	0	111	120
TOTAL	377	359	736	4,998	3,531	8,529	9,265
Percent Total			7.9%			92.1%	
Deficit			88			1,905	1,993
Percent Deficit			4.4%			95.6%	

Source: FY85 Navy Unaccompanied Personnel Housing Survey

TABLE HS-9: Navy Personnel with Dependents Living in Privately Owned
Housing By Complex 1983

Complex	Owner Occupied Units	Renter Occupied Units	Vacant	Total
North Bay Complex				
Officer	125	4	7	136
Enlisted	842	328	1	1,171
Central Bay Complex				
Officer	485	83	0	568
Enlisted	1,147	589	2	1,738
Nas Moffett Field				
Officer	282	63	2	347
Enlisted	610	545	1	1,156
NAVCOMSTA Stockton				
Officer	8	0	1	9
Enlisted	35	37	2	74
Total	3,534	1,649	16	5,199
Percent	67.97%	31.72%	0.31%	100.00%

Source: FY85 Navy Family Housing Survey

TABLE HS-10: Unaccompanied Personnel Living in Privately Owned Housing
By Complex 1983

Complex	Officer	Enlisted	Total
North Bay Complex	109	322	431
Central Bay Complex	289	358	647
NAS Moffett	201	253	454
NAVCOMSTA Stockton	8	29	37
Total	607	962	1,569

Source: FY65 Navy Unaccompanied Personnel Housing Survey

owners can still command reasonable prices for their units. As Table HS-11 shows, vacancy rates in the Bay Region are extremely low. Only multifamily units in San Joaquin County and the Solano/Napa area exceeded the optimal vacancy rate in 1980 and/or 1981, but by 1982 even these units dropped below the 4.5 percent rate. Although more current data are yet not available, new home construction has been depressed in recent years due to the recession and housing supply in this Region has not increased enough to satisfy demand and increase vacancy rates. This data does show an overall trend towards declining vacancy rates that is expected to continue through the next several years.

Housing price is also an important element of housing supply because housing cost affects the number of units available to people in different income categories. Overall, housing prices in the Bay Area are very high relative to the national average. In January 1983 the average home price in the Bay Area (nine counties) was \$130,000 while it was \$83,000 for the country, according to a Security Pacific Bank construction trends report. However, as Table HS-12 shows, in 1980 housing prices were so high that half the households in the ten Bay Region counties could afford fewer than 25 percent of the houses. This shows that affordable housing in particular is in short supply in the Region, even for the civilian population. For Navy personnel, this situation has serious implications because most Navy families cannot afford high priced housing. More discussion on this problem will be included later in this analysis.

While general issues of housing price and availability are important components of the housing supply analysis, housing location is also extremely important because DOD housing standards consider housing beyond a one-hour commute to be inadequate. Figures HS-1 and HS-1A show the distribution of rental housing in the Region by price. Most of the least expensive units are clustered in western Contra Costa and Solano Counties. These are good locations for personnel stationed at NAS Mare Island, but are quite far from Central Bay activities. Affordable housing is located in more remote locations as shown by Figures HS-2 and HS-2A. Areas shaded in the darkest tone are those considered generally affordable for Navy personnel. As with the rental units, the affordable houses tend to be concentrated in places at the periphery of the one-hour commute radius for personnel stationed at Central San Francisco Bay activities.

It is very difficult to forecast what the civilian housing market will do in the next several years since construction trends are so closely related to micro-economic conditions. However, ABAG projects that both population and employment in the Region will continue to grow enough over the next two decades to continue fueling housing demand. Also, a recent study done by the Federal Home Loan Bank of San Francisco indicates that over the 1970-1979 period housing production matched new household formation almost exactly and that this trend should continue through 1989. However, the question still remains as to where housing will be available in the Bay Area and at what price.

In its Projection - 83 study, ABAG shows that most of the population increase in this Region through the year 2000 will be in Solano, Sonoma, and Contra Costa Counties. Since housing construction can be expected to follow population growth, it can be assumed that these areas will also experience more intensive development than the Central Bay counties. Consequently, Navy personnel stationed in the Central Bay seeking private housing will be forced to live in communities at the periphery of the acceptable commute distance. Figure HS-3 shows the ten cities in the nine Bay counties with the most available vacant land, which are expected to

Table HS-11: Bay Area Region Vacancy Rates: 1980 - 1982

<u>County</u>	<u>Total</u>	<u>1980 Single</u>	<u>Multifamily</u>	<u>Total</u>	<u>1981 Single</u>	<u>Multifamily</u>	<u>Total</u>	<u>1982 Single</u>	<u>Multifamily</u>
Alameda	1.3	0.9	2.0	1.2	0.4	1.9	1.2	0.8	2.0
Contra Costa	1.9	1.5	3.0	1.7	1.5	2.3	1.7	1.3	3.0
Marin	1.2	1.0	1.7	1.3	1.0	1.9	1.3	0.9	2.1
Napa	See Solano and Napa								
San Francisco	0.8	1.0	0.8	0.7	1.3	0.2	0.7	1.5	0.7
San Joaquin	3.1	2.1	6.0	2.7	1.6	6.1	2.6	2.1	4.0
San Mateo	1.3	0.6	2.6	1.1	0.6	2.1	1.4	0.7	2.7
Santa Clara	1.3	1.0	1.8	1.5	1.1	2.2	1.4	1.0	2.1
Solano & Napa	2.7	2.0	6.0	2.1	1.9	3.3	1.7	1.3	3.0
Sonoma	1.9	1.5	4.2	1.8	1.4	3.6	1.3	1.2	1.5

Source: Federal Home Loan Bank Board, 1982.

Table HS-12: 1980 Median Income, Affordable Housing Price and Percent Housing Stock Available by County

<u>County</u>	<u>Median Income</u>	<u>Affordable Housing Price¹</u>	<u>% Housing Stock Available</u>
Alameda	18,700	\$50,714	less than 14%
Contra Costa	22,870	62,023	less than 25%
Marin	24,554	66,590	less than 7%
Napa	18,887	51,221	less than 12%
San Francisco	15,866	43,025	less than 6%
San Joaquin	16,071	48,089	less than 32%
San Mateo	23,172	62,841	less than 10%
Santa Clara	23,369	63,377	less than 8%
Solano	19,264	52,243	less than 25%
Sonoma	17,782	48,089	less than 9%

Notes: ¹Based on HUD standard that households pay 30% of their income for shelter. 80% loan to value ratio, 13% interest rate, 30 year amortization.

Source: 1980 Census.

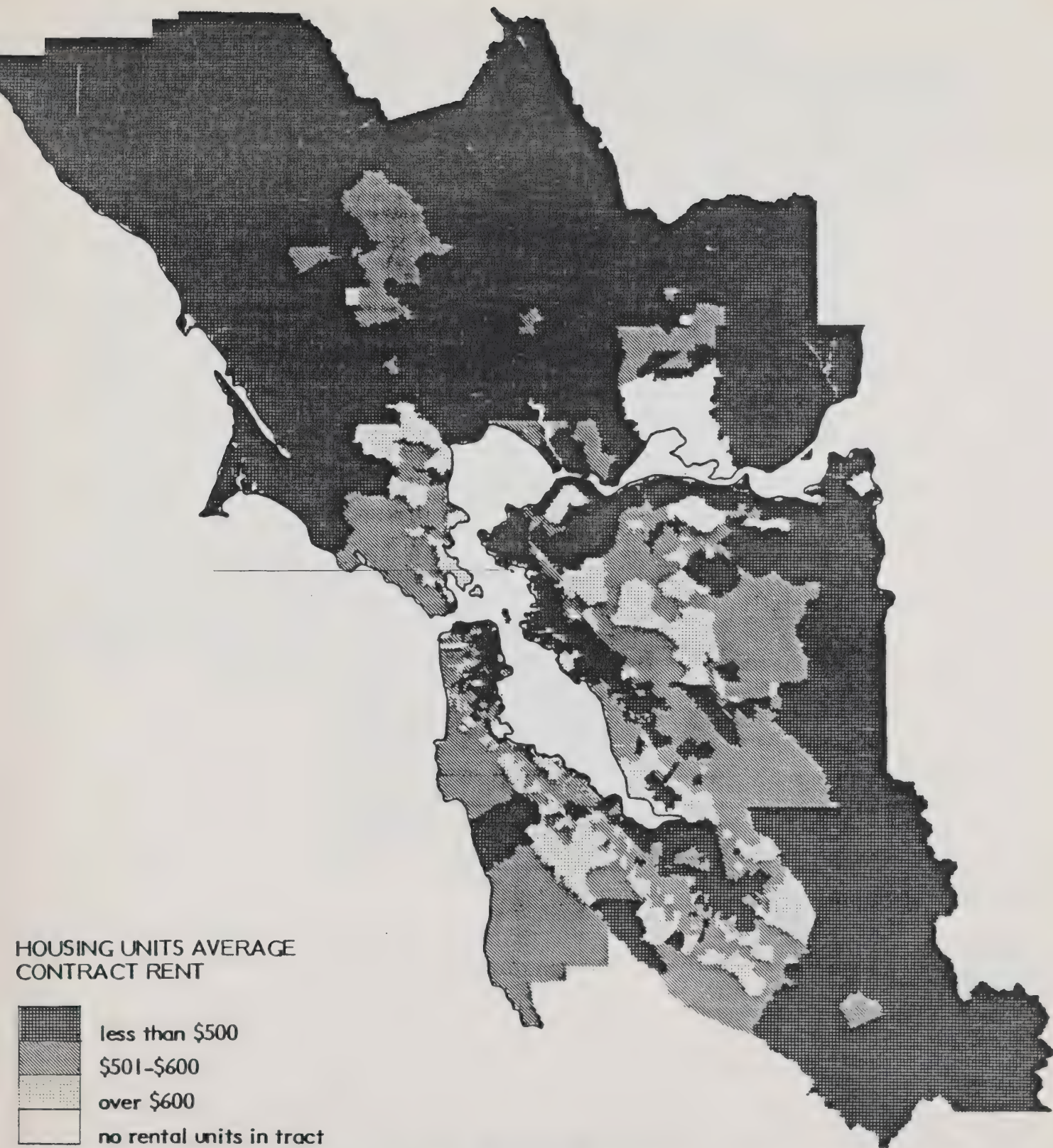
absorb large amounts of new residential construction. Of these, only Vallejo is the location of a major Naval activity.

The availability of affordable housing through the 1980's will be determined to a great extent by interest rates and price inflation. Single family homes will probably remain very expensive for the average housing consumer and Navy personnel are likely to continue facing affordability problems in this Region.

OPERATIONAL ANALYSIS

Limitations of the Family and Unaccompanied Personnel Housing Survey

Housing Demand. The Family and Unaccompanied Personnel Housing Survey process is an insufficient measure of the Navy's housing need in this Region for two reasons. One, the survey understates the housing requirement by only calculating living



Source: 1980 Census

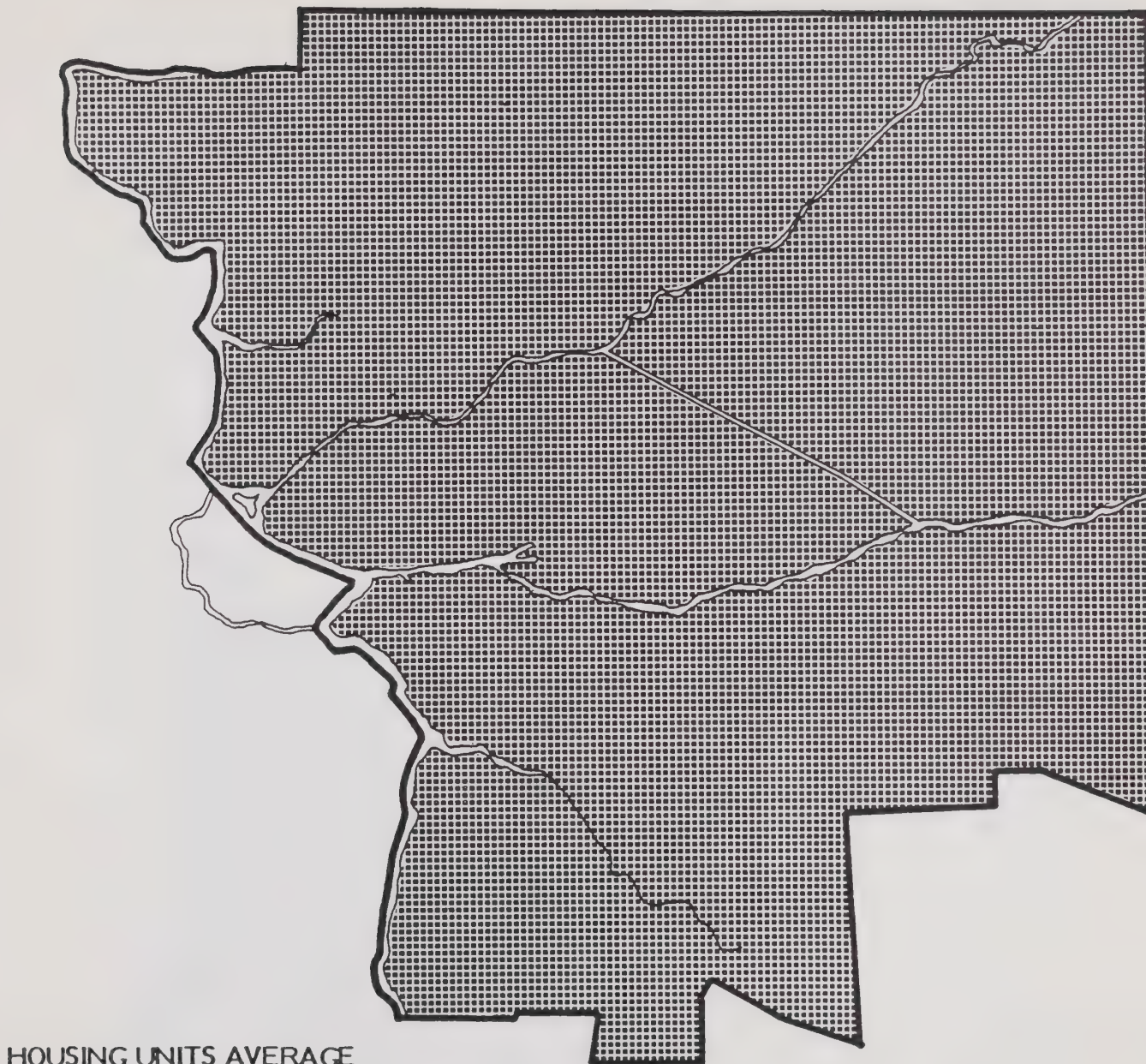
Figure HS-1

**CONTRACT RENT FOR
SAN FRANCISCO
BAY AREA**

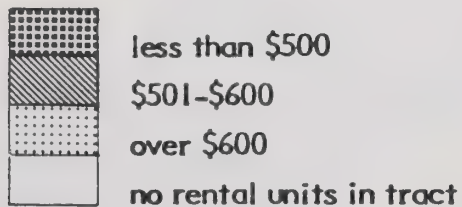


Western Division - Naval Facilities Engineering Command

**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**



HOUSING UNITS AVERAGE
CONTRACT RENT

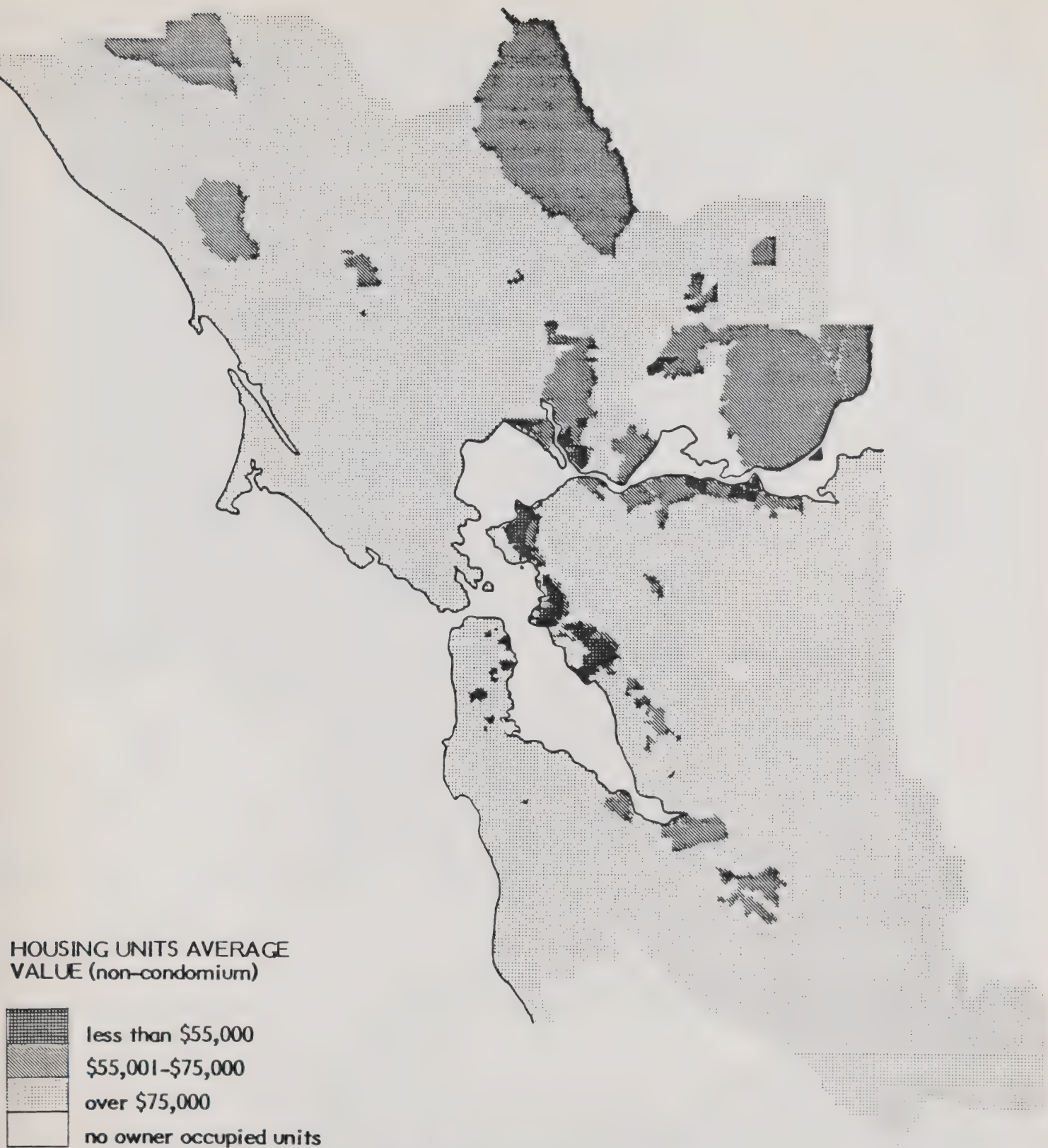


Source: 1980 Census

Figure HS-1A
**CONTRACT RENT FOR
METROPOLITAN
STOCKTON**



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES**

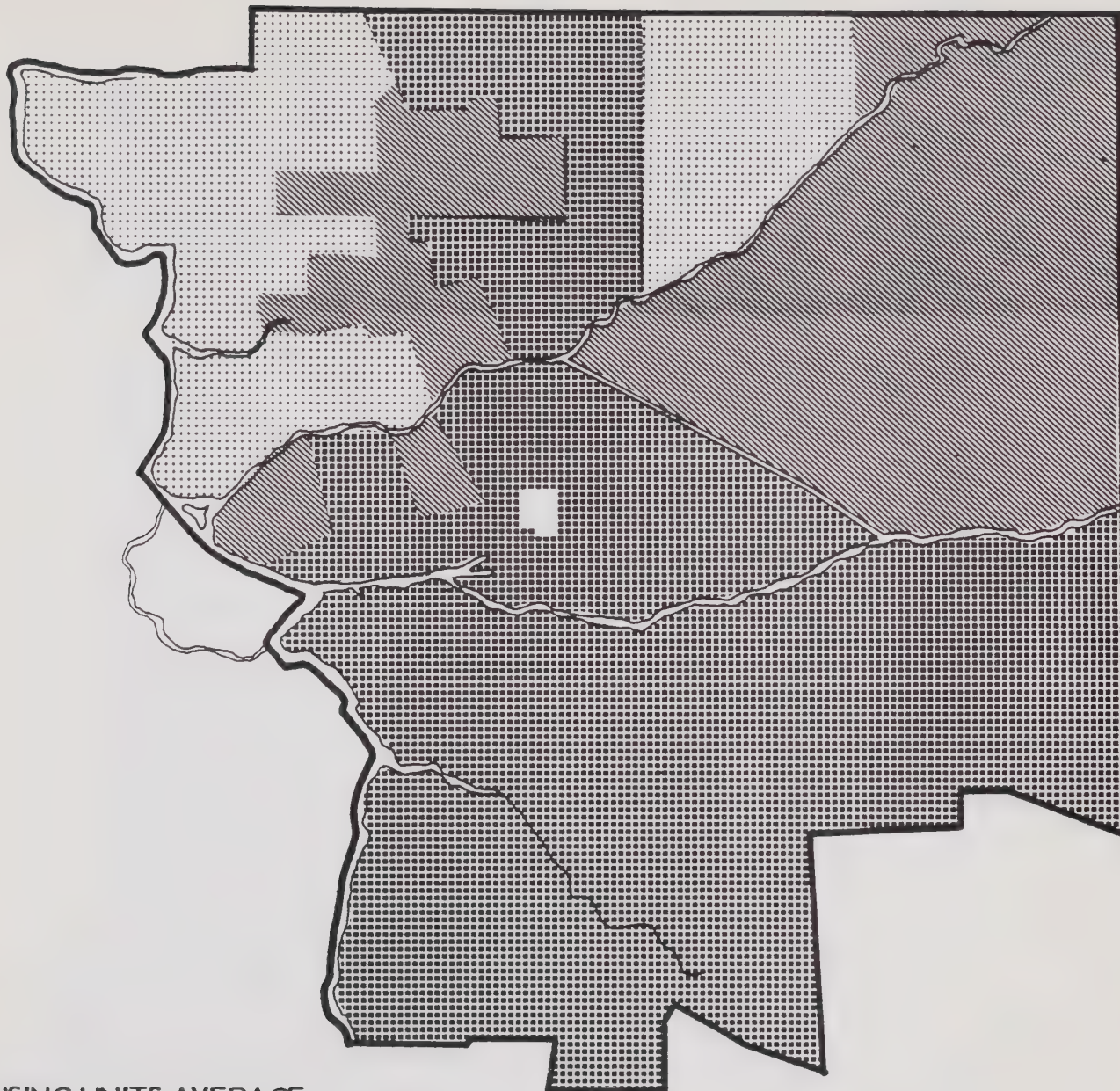


Source: 1980 Census

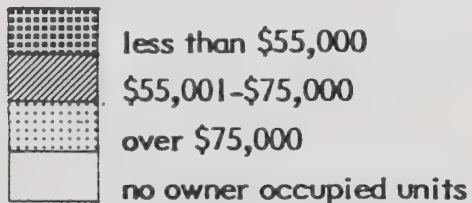
Figure HS-2
HOUSING VALUE FOR
SAN FRANCISCO
BAY AREA



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES



HOUSING UNITS AVERAGE
VALUE (non-condominium)



Source: 1980 Census

Figure HS-2A
HOUSING VALUE FOR
METROPOLITAN
STOCKTON



Western Division - Naval Facilities Engineering Command
REGIONAL PLAN FOR
SAN FRANCISCO BAY AREA
NAVAL SHORE ACTIVITIES

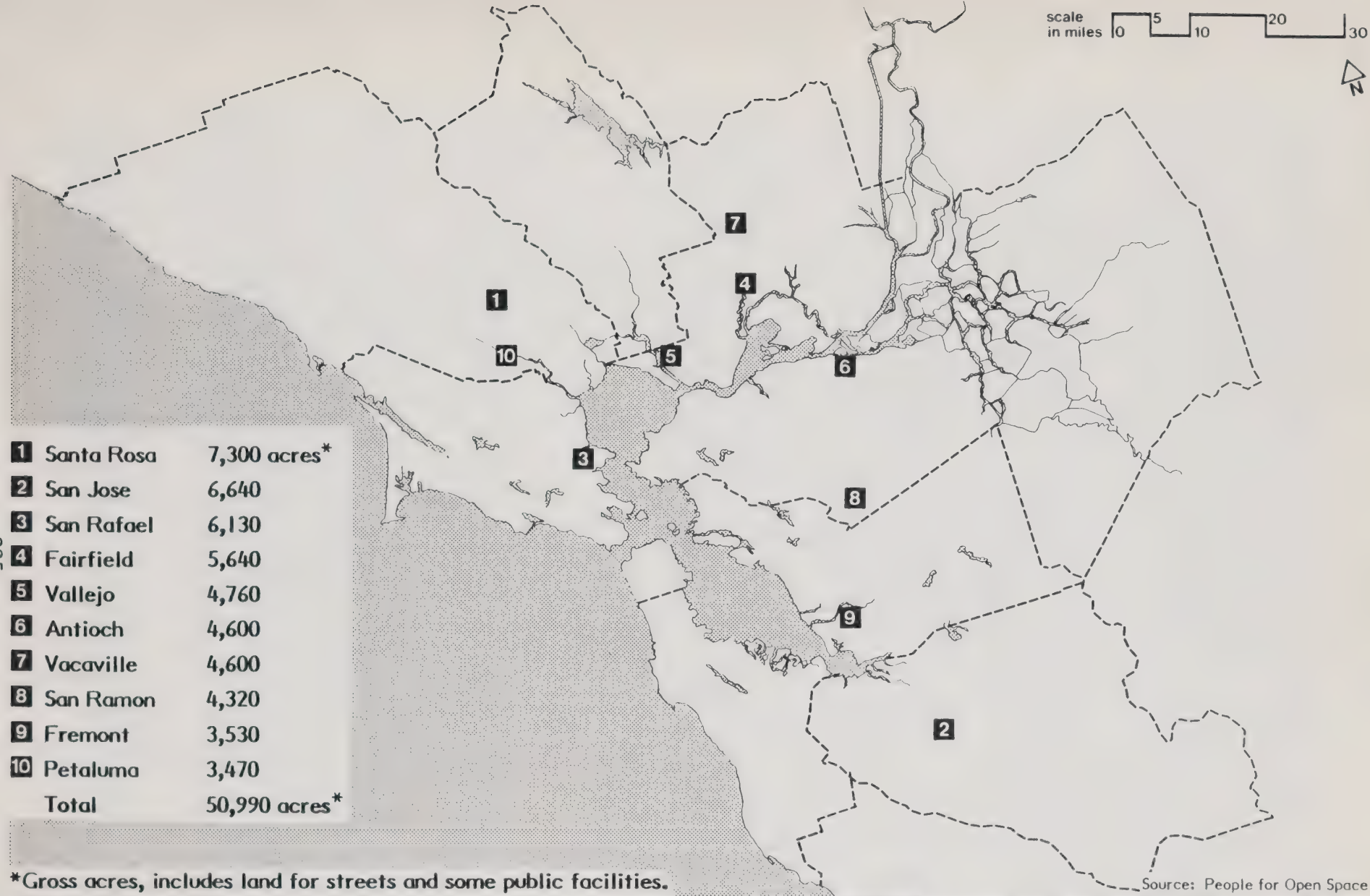


Figure HS-3

TEN BAY AREA CITIES WITH VACANT LAND FOR HOUSING DEVELOPMENT



Western Division - Naval Facilities Engineering Command
**REGIONAL PLAN FOR
 SAN FRANCISCO BAY AREA
 NAVAL SHORE ACTIVITIES**

conditions for 90 percent of the eligible personnel without regard for market conditions. In areas where housing is readily available, the eligibility criteria and program limits are a good way to keep the military's housing supply in line with demand. In the Bay Region, where affordable housing is in short supply, the military should consider supplying more housing or larger entitlements to all personnel. Otherwise low ranking enlisted personnel are being penalized by being stationed in this Region; but under the current survey process there is no mechanism for distinguishing Regions which have housing conditions creating hardships for Navy personnel.

A second deficiency with the housing survey relates to the way DOD criteria are applied to evaluate the adequacy of privately owned units. In theory, only if all of the criteria are met will the unit be considered adequate. In the Bay Area, if a unit costs more than 115 percent a person's housing entitlement, this alone is not sufficient grounds for classifying the unit as inadequate.

An example of how survey results can be misleading is the situation at the North Bay housing complex. The official survey results from 1983 project a surplus of 447 units for FY 88. However, there are 480 people on the family housing list who must wait as many as 12 to 14 months for a military owned unit. Most personnel on the waiting list want to live in military housing because their current residence is too expensive, but this problem is not reflected in the survey results.

The UPH program is subject to all of the above problems of the housing survey but it has an additional defect. Unlike family housing, substandard or inadequate unaccompanied housing is counted as an asset. Substandard units are often in poor condition, so nobody wants to live in them, and the occupancy rate is very low. When the occupancy rate is so low, funds cannot be programmed for improvements. The units deteriorate even further, fewer people will live in them and the cycle continues until the units are no longer habitable.

Housing Supply. The inadequacy of the housing survey as an indication of Navy housing needs has a direct relationship to the funds that are requested for new acquisition. Funds are allocated based on need, and need is assessed only in terms of the housing survey. Defining the magnitude of the problem is still only the first step towards actually acquiring new housing. The ability to acquire funds is ultimately limited by the nature of the MILCON budget process. This is true in both the amount of time it takes to get money appropriated, and the uncertainty of the review process, which involves many competing objectives.

Unresponsive Planning Cycle. The housing survey process projects housing need, or demand, five years in the future. These projections include current and projected base loading at each activity. The base loading projections are incorporated in the survey process only for changes approved by the OSD but anticipated changes in personnel such as homeport impacts are not. A new construction program will often be initiated based on an activity's projected program deficit for one year. The next year conditions at that same activity can change dramatically; the deficit becomes a surplus and the new construction is unnecessary. This problem is a direct result of a five year planning cycle for a system that actually changes more quickly.

Housing Policy

Housing Entitlements. The appropriate Variable Housing Allowance for an area is set by DOD. Policy states that 115 percent of the total UHA and BAQ should give

military personnel access to suitable private housing opportunities. Table HS-13 shows 115 percent of the total BAQ and VHA by rank and activity for Bay Area personnel with dependents. Table HS-14 shows the same information for personnel without dependents. When compared against the 1983 median housing prices for the Region's ten counties, it is apparent that the VHA is an insufficient supplement to pay for adequate housing in this Region, particularly for first time homebuyers who do not have equity from a previous home with which to buy down their loan amount. Personnel stationed in the Central and North Bay complexes could, according to the distance criteria, live in Alameda, Contra Costa, Marin, San Francisco, Sonoma, Napa, or Solano counties. However, as Table HS-15 shows, the monthly purchase payments on even the median priced house in Contra Costa, Marin, or San Francisco Counties exceeds even the highest housing allowances for personnel with dependents. Personnel without dependents receive a smaller entitlement and thus have even less money available with which to purchase housing. Housing entitlements for personnel stationed at NAS Moffett Field would not cover the monthly payments on a median priced house in Santa Clara County even at the highest level. San Joaquin County prices are slightly better in that most officers can afford a median priced house. However, only the top grade warrant officers also fall into this category, while no enlisted personnel could afford the median priced house.

Housing Assignment. Since DOD policy states that it is acceptable to commute a maximum of one hour to work, personnel stationed in the Central and North Bay housing complex areas can sign up to live at any activity with MEH within these two subregions. While this policy is intended to give all personnel equal opportunity to military housing, it creates tremendous inefficiency in terms of home to work commute patterns. Personnel often do not live and work at the same activity. This can result in extensive cross-regional commutes which are very costly for the individuals in terms of time and money as well as for the Navy in terms of morale and worker productivity. The relationship between housing and ground access is covered more extensively in the Ground Access Functional Analysis. However, it is important to once again underscore the significance of this relationship and the implications it has for Naval operations in the Bay Area.

Housing Planning

Site Selection. In anticipation of the FY 88 family housing new construction program which would create 300 additional family housing units in the Central Bay Area, a site alternative study is currently underway. Qualifying criteria for sites include a 10 acre size minimum, a one hour commute distance from Central Bay Activities, and public ownership. The more detailed criteria for conducting the analysis and ranking have not yet been finalized. When final selection criteria are developed, they should include the factors discussed below, which are considered crucial to the site selection process from a regional planning prospective.

The current Navy housing deficit is substantial; with the anticipated Fleet expansion deficits will increase. Therefore, the Navy needs housing sites it can acquire quickly. Since any land purchase would require Congressional approval, the best strategy would be for the Navy to use land it already owns or could obtain through land exchange.

A potential housing site's physical features must be considered in conjunction with the anticipated density of development because certain conditions may make some forms of construction that are prohibitively expensive. Key features to consider are: slope, groundwater table depth, and soil conditions. Single family housing can

TABLE HS-13: 115 Percent of Monthly Housing Entitlements With Dependents

Pay Grade	Central Bay	San Francisco	Concord	Vallejo	Skaggs Island	Stockton	Mountain View
E1	388.11	461.81	397.77	328.99	383.20	294.77	459.34
E2	400.40	481.46	410.06	341.27	395.49	304.59	476.54
E3	424.95	498.65	434.62	360.93	420.05	326.70	503.56
E4	450.43	512.37	461.82	383.00	441.99	346.27	529.25
E5	519.21	589.73	531.98	448.65	509.60	391.01	615.25
E6	582.49	648.76	596.29	509.09	565.05	460.41	662.71
E7	643.98	712.16	659.16	572.03	632.62	511.39	723.52
E8	716.50	736.85	732.71	598.37	659.50	561.80	761.28
E9	727.50	776.00	745.10	630.46	705.46	590.82	802.46
W1	575.89	587.18	591.07	466.85	568.35	414.03	594.81
W2	688.56	721.35	705.12	510.11	647.58	500.03	696.76
W3	702.91	725.73	721.29	548.73	684.65	520.34	725.73
W4	797.04	822.11	817.97	641.61	766.97	601.54	817.10
OE1							
OE2							
OE3							
O1	548.26	588.37	665.18	434.56	524.66	384.46	595.07
O2	615.78	661.55	731.81	478.40	590.82	449.35	653.23
O3	719.91	724.59	787.66	551.55	668.50	514.22	724.59
O4	821.47	873.46	540.62	681.00	805.87	639.49	837.06
O5	920.00	920.00	606.17	619.36	875.21	687.60	920.00
O6	920.00	920.00	665.85	774.71	920.00	729.96	920.00
O7			761.07	761.07		812.23	920.00
O8			761.07	761.07			
O9			761.07	761.07			

Source: WESTNAVFACENGC0M

TABLE NS-14: 115 Percent of Housing Entitlements Without Dependents

Pay Grade	East Bay	San Francisco	Concord	Mare Island	Skaggs Island	Stockton	Nas Moffett Field
E1	222.90	265.22	228.47	188.96	220.09	169.29	263.87
E2	243.48	292.78	249.37	206.38	240.50	185.22	289.81
E3	292.88	343.67	299.36	248.64	289.49	225.16	346.55
E4	302.42	344.00	307.79	257.15	296.75	232.47	355.43
E5	347.76	394.99	356.26	300.47	341.32	261.89	412.01
E6	372.99	415.43	381.74	325.93	361.82	294.83	424.11
E7	417.29	461.47	427.25	370.75	409.93	331.37	469.18
E8	508.02	522.46	519.62	424.32	467.61	398.34	539.99
E9	516.75	551.20	529.30	447.86	501.09	419.67	570.14
W1	444.48	453.19	456.18	360.32	438.66	319.55	458.98
W2	540.37	566.11	553.53	418.34	508.21	392.43	547.20
W3	570.09	588.60	584.92	459.03	555.29	422.02	588.59
W4	659.89	680.65	676.46	531.21	635.00	475.03	676.51
OE1							
OE2							
OE3							
O1	421.53	452.38	466.59	334.20	403.54	295.58	457.50
O2	487.13	523.33	504.68	378.44	467.38	355.47	516.73
O3	583.49	587.28	558.49	447.03	541.82	416.78	587.16
O4	680.97	690.00	606.14	564.50	668.05	531.28	690.00
O5	690.00	690.00	707.92	609.84	690.00	570.97	690.00
O6	690.00	690.00	796.06	635.40	690.00	598.72	690.00
O7						649.13	690.00
O8							
O9							

Source: WESTNAVFACENCOM

Table HS-15: 1983 Median Rents, Housing Values, and Average Monthly Housing Payments by County

	<u>Median House Value</u>	<u>Monthly Payment</u>
Alameda	\$ 95,088.00	\$ 841.44
Contra Costa	105,616.00	934.66
Marin	169,120.00	1,496.64
Napa	92,748	820.78
San Francisco	116,368.00	1,024.81
San Joaquin	66,490.00	588.41
San Mateo	135,856.00	1,202.27
Santa Clara	120,624	1,067.47
Solano	74,704.00	661.10
Sonoma	103,368	914.77

Notes: ¹Based on 1980 Census data inflated by appropriate component of the consumer price index.

²80% loan to value ratio, 13% interest rate, 30 year amortization.

Source: 1980 Census, California Association of Realtors, Bureau of Labor Statistics.

be built on almost any slope up to about 15 percent, as long as other conditions are suitable, without significantly increasing construction costs. However, townhomes or anything more intensive need to be on slopes under 5 percent or the foundation costs can be very expensive.

A third factor critical to the site selection process is commute distance to Central Bay Naval activities. Although the Navy uses a maximum of one hour as an acceptable commute distance, this standard assumes use of a private car, something which many low ranking enlisted people may not have. Therefore, it may be more appropriate to use a one hour commute distance by public transit or one-half hour by private car.

A fourth factor to be considered in site selection is public transit access to the site. Particularly significant are the transit links between the site and existing Navy activities so personnel will not require a car to reach their duty stations. Also important is that there be a transit connection between the NAVHOSP Oakland and

the site, allowing easy access for Navy spouses and their children who may require medical attention. Also, transit connections to major employment centers can enable working spouses to reach their jobs without a car.

Finally, the site should be readily accessible to community support facilities, preferably those provided by the Navy such as commissaries and exchanges. This will allow personnel to take full advantage of the benefits to which they are entitled.

When these factors are applied to a list of potential sites in the Bay Area, two Navy owned locations stand out as having excellent potential for new MFH. These are: NAVSTA Treasure Island, which has about 16 acres of good flat land available; and WPNSTA Concord, which has a 100 acre piece of flat land adjacent to existing family housing.

Other Planning Issues. Current policy for Navy housing prescribes relatively low density development of 5-7 units per acre. However, the density criteria can be waived in cases where higher density housing is appropriate to the site and compatible with surrounding land uses. In the Bay Area, where the land supply is limited, the Navy should consider waiving these requirements and building townhomes or garden apartments to standard densities.

REGIONAL ISSUES/OPTIONS

Issue 1: The housing survey is an insufficient tool for measuring the Navy's housing need in the San Francisco Bay Area.

Options:

- (a) Maintain the status quo.
- (b) Amend the survey process to consider housing requirements for all Navy personnel including those not eligible for Navy housing.
- (c) Find alternative data sources to provide more detailed information about living conditions for Navy personnel. The Navy already has several existing data bases which could provide relatively good information about where people live and how far they have to commute to work.
- (d) Do a special study of Navy housing conditions in the Bay Area to get accurate data concerning how many people are paying more than 115 percent of their housing entitlements for shelter, how many people live more than one hour from their duty station, and how many people are living in overcrowded or otherwise inadequate housing.

Issue 2: The amount of housing that can be provided through MILCON and the new construction program is not enough to eliminate the housing deficit in the Central Bay housing complex.

Options:

- (a) Maintain status quo.
- (b) Explore alternative ways for working with local non-profit housing developers to produce additional affordable housing units that can be dedicated for Navy use.
- (c) Educate local community leaders about the Navy's housing problems and enlist their support in lobbying Congress for additional MILCON appropriations to build housing in this area for additional programs to acquire housing in this area.
- (d) Move ahead quickly in determining an appropriate site (or sites) for programmed new construction so that these units can be built as soon as possible.
- (e) Increase the housing entitlements so military personnel can afford housing prices this Region. This would reduce the Navy's obligation of having to build new housing.

Issue 3: Site selection criteria for new housing should include factors that consider regional planning issues related to other functional systems including ground access and personnel support.

Options:

- (a) Maintain status quo.
- (b) Incorporate site selection criteria into the regional planning.
- (c) Develop specific guidelines for all site selection studies conducted in this Region.

XVII. PERSONNEL SUPPORT

OVERVIEW

Objectives

The Personnel Support Functional System includes commissaries and exchanges, special services, and the Personnel Support Activity. These three areas all address different aspects of personnel support and, thus, have varying missions and serve different clients.

General Characteristics

Commissaries and exchanges provide food, consumer goods and personal services to all active duty personnel and their dependents, retired military personnel, and survivors of deceased military personnel at prices generally below those in the civilian community. The availability of these goods and services is, first and foremost, to ensure military personnel adequate shopping opportunities even in remote locations. An additional benefit are the savings incurred from lower prices. These savings are considered part of the military personnel total compensation package, as well as an incentive for joining and staying in the service. In addition to this basic mission, exchanges have another charge in that the profits they earn are used to support the special services programs at each Activity.

The special services are available for active duty personnel, their dependents and if space permits, military retirees and civilian employees of the military. These programs are concerned with morale, welfare, and recreation and cover a wide range of services from day care centers to swimming pools.

The Personnel Support Activity manages military personnel pay and service records. This includes handling all matters related to pay checks, travel vouchers, promotional records, etc. Records for civilian personnel are handled through a different function, the civilian personnel office.

REGIONAL CONTEXT

Relationships to Other Functions

As Table PS-I shows, personnel working in all functional systems utilize Personnel Support services. Two functions including facilities maintenance and ground access provide support for the personnel support function.

There is a very strong relationship between the Housing and Personnel Support Functional System. This is particularly true for the commissaries and, to a lesser extent, exchanges which are oriented towards serving military families. Commissaries and Exchanges benefit from being close to where military personnel live because then people will shop in these facilities rather than in civilian stores. Consequently the commissaries and exchanges can capture a large share of their potential market.

Table PS-1: Relationship of Personnel Support to Other Functional Systems

<u>Functional Systems</u>	<u>Affected Activity</u>	<u>Type of Support Provided (P) or Received (R)</u>
Ground Assess	NAS Alameda NAS Treasre Island DODHF, Novato NAVSECGRUACT Skaggs Island NAVSTA Mare Island WPNSTA Concord NAVCOMSTA Stockton NAS Moffett Field	P - Allows customers to move between their residence and support activites activities, particularly if public transit is required.
Housing	See Above	P - Navy personnel should have the opportunity to live close to personnel support facilities to take full advantage of the services.
Facilities Maintenance	See Above	R - Maintain and repair facilities.
Fleet Berthing	NAS Alameda NSC Oakland NAS Treasure Island WPNSTA Concord NAUSHIPYD Mare Island	R - Ships' crews require personnel services when they are in port.

Relationship to the Civilian Community

Commissaries. Commissaries, which are like supermarkets, have come under considerable attack for creating unfair competition with the retail supermarket industry. The industry is constantly lobbying Congress to eliminate commissaries. Recently, a blue-ribbon presidential commission recommended that if commissaries are not eliminated altogether, they should at least be privatized.¹ While this type of opposition has been very strong in San Diego, where the Navy is planning to build several new commissaries, there has not been a problem in the Bay Area. There are probably two reasons why commissaries have not had opposition from Bay Area supermarket industry. First, the civilian population has grown steadily over the last twenty years while the military population has decreased in size. Consequently the commissaries have not threatened to take a significant amount of sales away from the civilian stores. Second, while the commissaries offer an extensive variety of merchandise, they do not carry as many goods as the modern supermarket.

Special Services. The special services offered by the Navy include recreational facilities as well as many social service functions similar to services provided in the civilian community. But, unlike the commissaries and exchanges, these services are not generally run for profit in either the Navy or the civilian community. Therefore there is no "competition" between the two. For example, most Navy activities have a counseling center that is equivalent to a local family service agency. NAVFAC-ENGCOM planning criteria for recreational facilities specifically state that the community should provide morale, welfare, and recreation opportunities as much as possible. But most Naval Activities in the Bay Area are large enough to warrant a full complement of special services in addition to what is available in the community.

Schools. Primary and Secondary schools are one community service function that is not provided by the military within the continental United States. Instead military families are entirely reliant on the civilian community for these facilities.

In general, military dependents attend local public and private schools. Serving these children can be difficult because they are transient and military personnel living in military housing do not pay local property taxes. While there is no solution to the transience problem, the federal government ameliorates the tax situation by reimbursing school districts serving military dependents with Federal Impact Funds. These funds are paid at a varying rate depending on whether the student lives on or off a military base; the rate is also higher if he or she is physically or mentally disabled. Several school districts in the Bay Area that serve large military populations were contacted to determine the affect these students have on the schools. All three districts contacted, including San Francisco, Alameda, and Vallejo, have no problem accommodating military children. The district representatives for San Francisco and Alameda also said that if the number of military children were to increase significantly as a result of the proposed homeporting plan, this would not create a problem in terms of classroom crowding. Vallejo already has some problem with crowding in its secondary and high schools due to general population growth in the area. Some new school construction is being planned to alleviate this problem and the increased capacity should be sufficient to handle any potential increase in military dependents in the city.

¹Blucher, Jay. "Will it Bring Down the Commissaries." Military Market. March, 1984.

Two activities in the Bay Area, NAVSTA Treasure Island and NAVSTA Mare Island, have elementary schools within their boundaries. However, these schools are owned and operated by the local school district. The school at NAVSTA Treasure Island currently has about 835 students in grades K-5. Only about 550 of these students are military dependents living on the base; the rest are bused to Treasure Island from San Francisco on a daily basis. The Mare Island school serves about 500 students, all of whom are military dependents living at the Naval station.

OPERATIONAL ELEMENTS

Commissaries

Administration. Commissaries are under the purview of the Navy Resale and Service Support Office (NAVRESSO) which is a division of the Navy Supply Command. NAVRESSO operates and provides management support, policy, administrative and technical guidance and assistance to its support regions and to the commissary stores.¹ Historically, the relationship between NAVRESSO and the individual stores has not been close. However, in 1982 there was a major move towards more centralized management, particularly with regard to purchasing, so the commissaries now function like a national supermarket chain rather than as individually owned stores. This trend was initiated to utilize telecommunications for monitoring inventory, to enhance efficiency in store management, and to increase services for the customers.

Most of NAVRESSO's administrative functions are carried out by Regional Field Support Offices (FSO's). The FSO for this Region is located at NSC Oakland and has jurisdiction over commissaries at Navy activities in the San Francisco Bay Area as well as Monterey, Lemoore, Fallon (Nevada), and Centerville Beach (California). Within this regional unit merchandising, data processing, purchasing, accounting, distribution, personnel, and training are handled centrally by the FSO staff. However, decisions about what goods to stock in individual stores are made by the base commanding officers (C.O.) in conjunction with the FSO.

Individual commissaries are run by an officer in charge (OIC). This officer has direct responsibility for the day to day operations. While the OIC reports directly to the FSO the local commanding officer also provides policy guidance.

Funding. Commissaries are nonprofit enterprises. The stores are funded by congressional appropriations which pay for salaries. A 5 percent surcharge on all goods sold covers facilities replacement costs and operating expenses, including utilities and advertising.

Commissary and Exchange Clientele. Commissaries cater primarily to married personnel or unaccompanied personnel living in private housing. The exchanges, which sell a broad variety of retail goods as well as personnel services, serve both married and single personnel. In addition to active duty Navy personnel and their

¹NAVRESSO Mission Statement.

dependents, active duty personnel in all other branches of the military, retired military personnel, and the survivors of deceased military personnel are entitled to use the commissaries and exchanges.

Planning Process. The FSO submits quarterly and annual gross sales projections to NAVRESSO; these are translated into sales plans. These projections are based on the deployment schedule of ships, published quarterly, which tells the FSO officer in charge when ships will be in port so he can plan his purchasing for the commissaries. Other information regarding changes in personnel loading at Navy Activities are not routinely sent to the FSO. If any changes are to be made, the FSO often finds out about them through informal channels. As a result, NAVRESSO planning for changes in commissary operation required by personnel loading changes at individual activities tends to be reactive, rather than proactive.

Specific guidelines for facilities planning are disseminated by NAVFACENGCOM through the "Facility Planning Criteria for Navy and Marine Corps Shore Installations." This document specifies what size facilities are acceptable based on personnel loading at a given activity. If an activity's personnel loading is increased substantially, the planning criteria would indicate how many square feet of space should be added in the commissary to accommodate this change.

Current Facilities. Eight activities in the San Francisco Bay Region have commissary stores, as shown on Figure PS-1. The commissaries are all considered adequate in terms of size. However, some facilities are in inefficient buildings, or in locations that are inconvenient for customers--thus requiring upgrading.

In cases where a facility is upgraded, the commissaries will probably be incorporated into a complete retail complex which accommodate exchange operations as well. Such a project has recently been completed at NAVSTA Mare Island. Other activities where these modifications are required include NAS Moffett Field, WPNSTA Concord, NAVCOMMSTA Stockton, and NAVSTA Treasure Island. Currently there are no plans to build any new commissary facilities in the San Francisco Bay Region.

Projected Changes in Service Demand. The commissary system will be directly affected by increased homeporting in this Region. However, the magnitude of the impact is impossible to calculate until a firm decision is made about how many ships will be coming into the area and where, within the Region, the ships will go. An indirect factor that will also affect the level of sales increase at the commissaries is where personnel will live. If no new Navy housing is built, most of the new personnel will probably not live close to their duty stations thereby potentially decreasing the likelihood of their shopping regularly at commissaries.

Exchanges

Administration. Exchanges are officially under the control of each activity's commanding officer and are part of his chain of command. However, NAVRESSO has been mandated to provide extensive technical assistance to the exchanges and has primary responsibility for the exchanges' financial management, acquisition, distribution, industrial relations, data processing, and sales coordination. These responsibilities are carried out locally through NAVRESSO's FSO. Decisions about general merchandise the exchanges may or may not carry have been determined by DOD and the House Armed Services Committee. Beyond these basic guidelines, NAVRESSO has established a minimum list of goods every exchange must carry called the master stock assortment. All other merchandising decisions are made by the FSO in conjunction with the Activity.

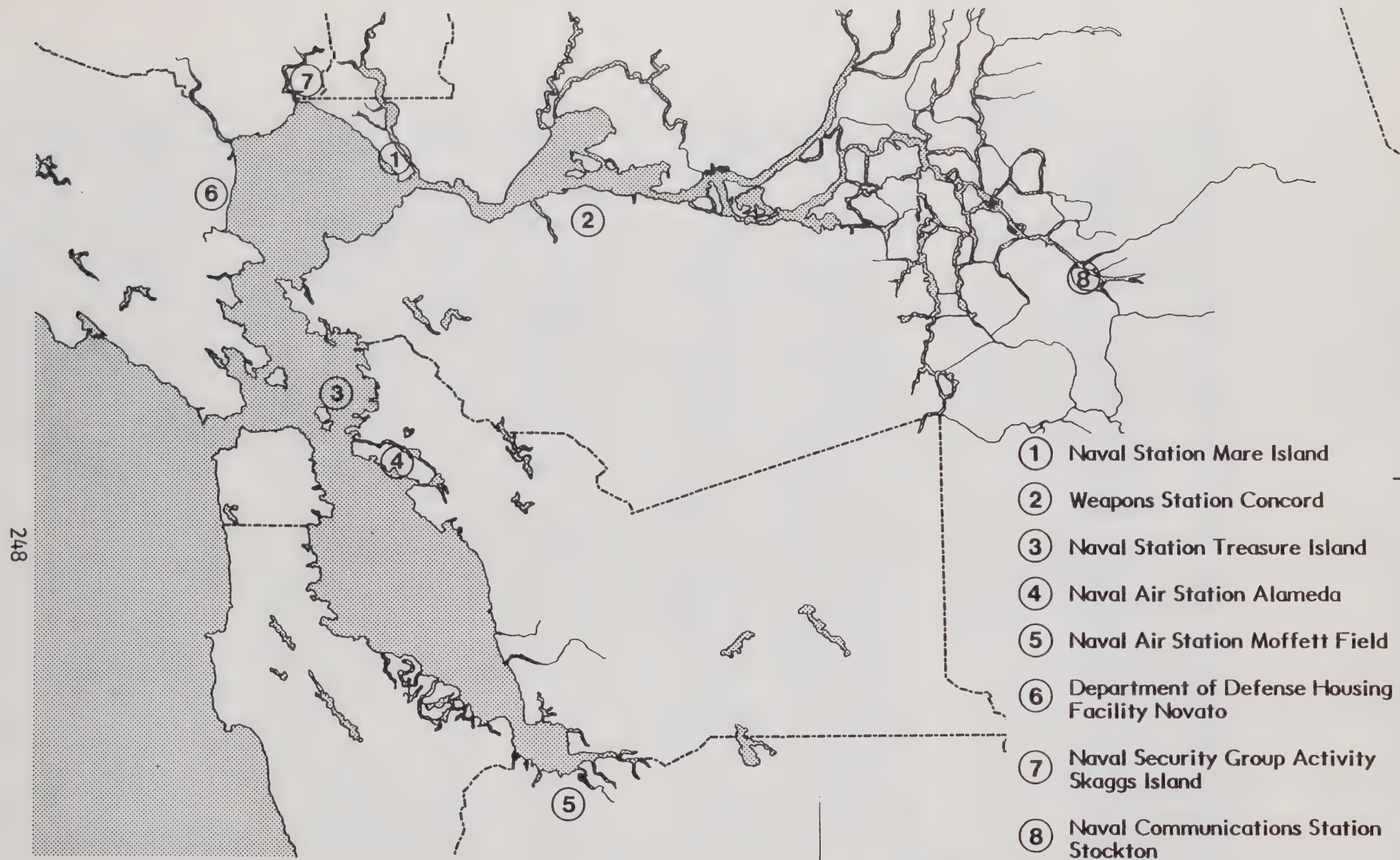


Figure PS-1

LOCATIONS OF NAVAL ACTIVITIES WITH COMMISSARIES



Western Division - Naval Facilities Engineering Command

REGIONAL PLAN FOR SAN FRANCISCO BAY AREA NAVAL SHORE ACTIVITIES

The individual exchanges are run by a Naval Exchange Officer (NEO) at each Activity. The NEO is a department head who reports directly to the commanding officer but also works very closely with the NAVRESSO FSO. Some activities are not large enough to warrant a full exchange. Instead, the exchange is operated as a branch of a larger exchange located someplace else in the Region. NAS Alameda has a Regional exchange with branches at: WPNSTA Concord, NAVHOSP Oakland, NAS Fallon (Nevada), NAVCOMMSTA Stockton, NSC Oakland, NAVSTA Treasure Island and NALF Crows Landing.

NAVSTA Mare Island has a Regional exchange with branches at NAVSECGRUACT Skaggs Island and DODHF Novato. The Regional exchange provides technical support to its branches and does some of the accounting work. Otherwise, branch exchanges have considerable autonomy in terms of merchandising and daily operations.

Budget/Funding. Navy exchanges are self-supporting operations. However, individual exchanges do not have direct control over all their profits. DOD requires that a certain percentage of the money be allocated to different funds including reinvestment, capital improvements and local welfare/recreation services. The percentages each exchange contributes to these funds varies by size and whether it is a branch or a regional operation.

Planning Process. Like the commissaries, the exchanges plan by projecting sales quarterly and annually. However, plans for physical expansion, renovation, or new store construction are initiated by the local commanding officer. He will request funds through the regular military construction budget (MILCON) for his base. If MILCON funds are not approved, the C.O. can then request that NAVRESSO pay for the improvements. In recent years MILCON funds have not been allocated for exchanges and NAVRESSO has paid for all capital improvements out of its budget.

Because exchanges are in the same chain of command as the local commanding officer, NEO's have better access to information regarding changes in base personnel than do their counterparts at the commissary. However, there is no formal process for translating this information into a plan of action. Instead, each activity, using the planning criteria, can decide what changes will be appropriate given any particular set of circumstances.

Current Facilities. Every activity within the San Francisco Bay Region, big and small, has an exchange. These operations vary in size and merchandise selection from the NSC Oakland exchange, which provides only a minimum of convenience goods, to the NAS Moffett Field exchange, which has a full variety of retail goods and personal services. The exchange facilities at most Bay Area activities are adequate in terms of space. However, many of the facilities at NAVSTA Treasure Island are too small to accommodate the current personnel compliment. These facilities are also located in remote areas of the Activity away from where they would be most convenient to the customers. Other Activities are planning to consolidate exchange operations into a more efficient retail sales complex as funds become available. However, NAVRESSO has no current plans fund any of these projects.

Projected Change in Service Demand. Service demand for exchanges in the San Francisco Bay Region is expected to change as a result of the proposed increase in homeporting for this Region. See projected change in service demand for commissaries for a more detailed discussion of this situation.

Special Services

Administration. Special services programs are run by individual Activities. Guidelines and some funding for these programs are provided by the Naval Military Personnel Command (formally, BUPERS). These programs include recreation, clubs, package stores, transient family housing, child care centers, hobby shops, etc. There is a Director of Special Services at each Activity who reports directly to the C.O. and is responsible for coordinating the operation of all special service programs.

Budget/Funding. Approximately 90 percent of the special service operating budget comes from non-appropriated funds, including exchange profits and user fees. The remaining 10 percent comes from congressionally appropriated funds which are used for staff. User fees for special services are generally set according to Naval Military Personnel Command (NMPC) guidelines regarding self sufficiency. Some services are expected to pay for themselves, while others are not.

Clientele. Active duty military personnel have first priority for all special services. Military dependents have next priority, followed by military retirees. Retirees are very frequent users of recreational facilities, particularly golf courses. Civilian employees of the Navy are also eligible to use Navy special services if space permits but they are the lowest priority users and are easily pre-empted.

Planning. Special services are on an annual budget cycle which also serves as their planning process. The different programs submit their budget proposal to the director, who is responsible for making the final determination regarding how funds will be allocated. There is no formal method for incorporating base loading projections into the process. If the base's population is going to change significantly, the C.O. generally informs the special services director.

Once the special services director knows how many new personnel will be coming to the activity, he can compare his current facilities with the facilities planning guidelines to determine whether or not they are adequate. If the facilities are too small, the activity can request funds for improvements as part of the activity's capital improvements funds. The C.O. can use his own discretionary funds to upgrade special service facilities.

Current Facilities. All activities offer approximately the same range of special service programs as is dictated by NMPC guidelines. The quality of these facilities depends, to a great degree, on building age, configuration, and location. As with the commissaries and exchanges, some special service programs at Bay Area Naval Activities are in obsolete facilities that are not in the best location to serve their customers. This is particularly true at NAVSTA Treasure Island and at NAVHOSP Oakland.

Projected Changes in Service Demand. As with the other personnel support functional areas, special service programs will be significantly impacted by the proposed homeporting increases in this Region. Since these programs are primarily funded through exchange profits and user fees, an increase in customers will also mean an increase in funding. However, it is not known at this time what the magnitude of the increase will be and whether or not the additional funds generated will be sufficient to cover the necessary increase in service provisions.

Personnel Support Activity

Administration. The Personnel Support Activity (PSA) is part of the COMNAVLOG-PAC chain of command and is responsible for maintaining pay and service records for activity duty and reserve personnel assigned to shore activities in this Region. In addition, the PSA issues all paychecks and makes travel arrangements for military personnel traveling on business or to new duty assignments. This command does not make any policy decisions regarding personnel policy. However, when new policy decisions are made, the PSA decides how the decision will be implemented locally.

Individual commands are assigned to a Personnel Support Detachment (PSD) which is responsible for actually maintaining the pay and service records. The PSD officer in charge reports to the PSA C.O. who is located at NAVSTA Treasure Island. Not all Activities have a PSD office located on the premises. The PSD at NAVSTA Treasure Island serves all commands in the central Bay Area except the NAVHOSP Oakland, and all transients and students in the entire Region. The PSD at NAVHOSP Oakland also serves NAVCOMMSTA Stockton. NAVCOMSECGRUACT Skaggs Island as well as other activities in the North Bay are served by the NAVSTA Mare Island PSD (excluding DODHF which, as part of the PWC SFRAN Bay Oakland, is served by the PSD at Treasure Island).

OPERATIONAL ANALYSIS

Commissaries and Exchanges. Overall, Navy commissaries and exchanges in the San Francisco Bay Area are able to meet their objectives in terms of providing goods and services to Navy Personnel at prices that are, on average, about 20 percent lower than prices in civilian retail stores. However, the commissaries and exchanges have trouble attracting prospective customers because so many Navy personnel live in private housing located at great distances from the Navy bases.

The commissaries and exchanges are further impaired in their ability to attract customers by their physical facilities. According to Navy planning standards, most commissaries and exchanges in the Region are adequate. But adequacy is determined on a square foot basis with no concern to building age, configuration, or location relative to customers. Therefore most commissaries and exchanges are in buildings that are not conducive to modern retailing techniques and cannot be as competitive with civilian retail operations as they would like. While this problem has been identified in many Activity master plans, progress toward improving the situation has been very slow.

Special Services

Special service programs are the core of the Navy's welfare and morale program. These services are supposed to be an inducement to join and stay in the Navy both for the active duty person and his or her dependents. This policy is reflected in the fact that dependents are fully entitled to participate in special service programs; but dependents are not considered in the criteria for determining the size of special service facilities. The planning manual only includes active duty personnel when specifying the number of square feet of space per person. As a result, certain facilities, particularly recreational ones, are too small for the number of people who use them, although they are large enough according to the planning standards.

Personnel Support Activity

The personnel support activity is a relatively new organization only dating back to 1976. Before that time all personnel and pay records were maintained at individual activities. The C.O. had ready access to the personnel information and problems with pay or services records could be handled easily. With the PSA's inception, commanding officers lost a certain amount of control over this information. As a result, the PSD's are not always able to be as responsive to their client's needs as they were with the old system.

Another more serious problem associated with the new system is the fact that not all activities have their own PSDs. Consequently, when ever there are problems with records that must be settled by the individuals themselves, considerable amounts of time are spent traveling back and forth from the duty station to PSD. For example, the commanding officer at one remote Bay Area activity identified problems that range from missing record enteries to late pay checks. While some of these are minor, the problems can cause significant hardships for individuals as well as considerable inefficiency for Naval Operations.

REGIONAL ISSUES AND OPTIONS

Issue 1: The dispersal of Navy personnel living throughout the Region makes it difficult for commissaries and exchanges to efficiently serve their clientele.

Options:

- (a) Maintain status quo.
- (b) Locate additional Navy housing in locations that are easily accessible to a Navy activity with a commissary and exchange.
- (c) Build a new commissary/exchange complex that would be oriented towards serving Navy personnel living in more remote residential areas of the region. This complex should be located in a place that is easily accessible by freeway as well as by public transit.

Issue 2: Some special services facilities are not adequate to serve the entire population they are supposed to serve.

Options:

- (a) Maintain status quo.
- (b) Restrict the people eligible to use certain facilities to active duty personnel.
- (c) Suggest that NAVFACENGCOM reconsider its criteria to include the total number of people who will be using the facility beyond just active duty personnel.

Issue 3: Remote activities without a personnel support detachment are often subject to problems concerning pay and service records that take

considerable effort to resolve at great cost in terms of time and efficiency.

Options:

- (a) Maintain status quo.
- (b) Consider possibility of placing PSDs at all locations that are currently beyond a one-half hour one-way trip from their PSD.

APPENDIX A: HIGHWAY CAPACITY AND SERVICE LEVEL DEFINITIONS

The physical characteristics of a highway determine its ability to serve traffic. The traffic capacity of surface streets is usually controlled or determined by the geometric design of street intersections where conflicting traffic movements must be accommodated. Freeway capacities are basically a function of freeway width, although numerous other factors, such as the grades, curvatures, and traffic merging and diverging movements affect freeway capacity. The presence of trucks in the traffic stream directly influence roadway capacity. Trucks are larger, less maneuverable, and have different acceleration-deceleration characteristics from automobiles. The result of these characteristics is that an increased percentage of trucks in the traffic flow will reduce roadway traffic capacity.

The types of traffic conditions which result from various ranges of traffic volumes versus capacity are commonly termed as roadway service levels. Traffic engineers have defined such conditions in terms of six "Levels of Service" ranging from Level of Service "A," a free flow condition, to Level of Service "F," a condition of forced, bumper to bumper, stop and go traffic flow. Table A-1 defines the various service levels. In urban situations, Level of Service "D" is typically selected as the upper limit of tolerable traffic conditions for the purpose of roadway planning and design. At this service level, drivers will ~~experience some congestion and delay~~, often waiting through a full signal cycle before clearing major intersections, and encountering reduced speeds and periodic stop and go conditions on freeways. A peak hour traffic condition worse than this service level would signify a need for transportation improvement measures which either increase capacity or reduce peak traffic flows at the critical location.

Volume - Capacity Relationships

Dividing the traffic volumes on a given roadway segment by the roadway's capacity produces a volume/capacity ratio often abbreviated as V/C ratio. This ratio is a measure of the congestion on a given roadway segment. A V/C ratio of 1 would indicate that the traffic volume on the roadway was equal to its capacity - thus, congestion and delays would be common. The lower the V/C ratio, the less crowded the roadway. A V/C ratio greater than 1 indicates an extremely congested roadway characterized by stop and go traffic and numerous bottlenecks.

Table A-1: Levels of Service

Level A--free flow, low volumes and densities, high speeds. Drivers can maintain their desired speeds with little or no delay.

Level B--stable flow, operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed. Suitable for rural design standards.

Level C--stable flow, but speeds and maneuverability are more closely controlled by higher volumes. Suitable for urban design standards.

Level D--approaches unstable flow, tolerable operating speeds which are, however, considerably affected by operating conditions. Drivers have little freedom to maneuver.

Level E--unstable flow, with yet lower operating speeds and, perhaps, stoppages of momentary duration. Volumes at or near capacity.

Level F--forced flow, low volumes. Both speed and volumes can drop to zero. Stoppages may occur for short or long periods. These conditions usually result from queues of vehicles backing up from a restriction downstream.

APPENDIX B: DETAILED SELECTED TRANSIT ACCESS PROFILES FOR NAVAL ACTIVITIES

This appendix presents transit profiles detailing the public transit link(s) between Naval activities which contain major Navy housing facilities and activities which are major work/duty stations for Naval personnel, and between all activities and the Naval Hospital in Oakland. Each profile describes the public transit route and includes the time and cost of each portion of the trip. Where appropriate, suggestions have been made to improve access by a different approach.

Origin: DODHF	Destination: SKAGGS ISLAND
Total Distance: 12 miles	Total Cost: NA
Total Est. Time: NA	Total Transfers: NA

Qualitative:

Skaggs Island is located north of Highway 37, 12 miles west of Vallejo. There is no public transit service to/from Skaggs Island. To access Skaggs Island, one must get from the Vallejo Greyhound station (12 miles) or from Novato or Ignacio Greyhound station (20 miles). The trip from DODHF is approximately 20 minutes by auto.

Origin: DODHF	Destination: MARE ISLAND
Total Distance: 20 miles	Total Cost: \$4.65
Total Est. Time: 80-100 minutes	Total Transfers: 3

Qualitative:

Must go from DODHF via GG Transit to San Rafael to catch Traveler's Transit to Richmond Greyhound Station. Richmond Greyhound to City of Vallejo; City of Vallejo Municipal Transit (or possibly Mare Island Ferry Company) to Mare Island main gate. A tedious trip. (Only 20 miles by auto.)

Detail:

1. DODHF	To: San Rafael
Distance: 6 miles	Cost: \$1.00
Time: 25 minutes	Via: GG Transit #70 or 80

Note: Frequency every 30 minutes during commute hours. Must catch it on the Ignacio Bus Pad. (Slower route is #1 on Ignacio Boulevard.) Stops at 4th/Hetherton, Greyhound at 4th/Irwin.

- | | |
|--|--|
| 2. San Francisco
Distance: 9 miles
Time: 12-15 minutes | To: Oakland 12th Street Station BART
Cost: \$1.20
Via: BART |
| 3. 12th Street BART
Distance: 3 miles
Time: 20 minutes | To: Alameda
Cost: \$.30 for transfer from BART
Via: AC Transit #42 |

Note: Frequency every 10-15 minutes during commute hours.

Origin: DODHF	Destination: NAVAL HOSPITAL OAKLAND
Total Distance: 38 miles	Total Cost: \$4.20
Total Est. Time: 114-139 minutes	Total Transfers: 2

Qualitative:

DODHF via GG Transit to SF BART; BART to Oakland Coliseum Station; AC Transit #56 to Naval Hospital Oakland. Some buses leave from Ignacio Bus Pad on U.S. 101, not from Ignacio Boulevard.

Detail:

- | | |
|--|---|
| 1. DODHF
Distance: 24 miles
Time: 70 minutes | To: San Francisco BART
Cost: \$2.45
Via: GG Transit |
|--|---|

Note: Only GG Transit #1 leaves from Ignacio Boulevard. #48 from Sunset Parkway at origin of Ignacio Boulevard goes directly to SF, taking about 60-70 minutes. (Leaves every 10 minutes from 6:20 to 7:00.) Another option is to get to the Ignacio Bus Pad on 101, to catch #51 (to ferry terminal) or #52.

For midday trips, take #70/80 from Ignacio Bus Pad. Frequency is every 30 minutes.

- | | |
|---|---|
| 2. San Francisco
Distance: 13 miles
Time: 21-25 minutes | To: Oakland Coliseum Station
Cost: \$1.45
Via: BART |
| 3. Coliseum Station
Distance: 4 miles
Time: 23 minutes | To: Naval Hospital Oakland
Cost: \$.30 for transfer
Via: AC Transit #56 |

Note: Frequency every 15 minutes during commute hours, every 20 minutes midday.

Origin: DODHF

Destination: TREASURE ISLAND

Total Distance: 28 miles

Total Cost: \$3.05

Total Est. Time: 80-100 minutes

Total Transfers: 1

Qualitative:

GG Transit to SF Transbay Terminal; AC Transit #T to Treasure Island.

Detail:

- | | |
|---------------------|-------------------------------------|
| 1. DODHF | To: San Francisco Transbay Terminal |
| Distance: 24 miles | Cost: \$2.45 |
| Time: 60-70 minutes | Via: GG Transit #50/60 |

Note: Only GG Transit #1 leaves from Ignacio Boulevard. #48 from Sunset Parkway at origin of Ignacio Boulevard goes directly to San Francisco, taking about 60-70 minutes. (Leaves every 10 minutes from 6:20 to 7:00.) Another option is to get to the Ignacio Bus Pad on 101, to catch #51 (to ferry terminal) or #52. Other buses also leave from this pad. #50/60 leaves hourly from Hamilton AFB. Some buses terminate at Civic Center. #60 departs hourly during the day with late evening buses terminating in San Rafael.

- | | |
|----------------------|---------------------|
| 2. Transbay Terminal | To: Treasure Island |
| Distance: 4 miles | Cost: \$.60 |
| Time: 10 minutes | Via: AC Transit #T |

Note: Frequency every 60 minutes during commute hours.

Origin: DODHF

Destination: NSC OAKLAND

Total Distance: 34 miles

Total Cost: \$3.90

Total Est. Time: 88-90 minutes

Total Transfers: 2

Qualitative:

An Army commute bus service at one time ran from DODHF to NSC Oakland, but has been discontinued. Sources at NSC Oakland say that the service was discontinued because people did not want to pay \$12 per month. Public transit information is provided below.

DODHF to SF BART via GG Transit; BART to Oakland West Station; Oakland West to NSC Oakland via AC Transit #82 or 83.

Navy Recreational Service vehicles provide transport from DODHF to and from some ships at NAS Alameda when those ships are in port. It would be possible to go from

NAS Alameda to NSC Oakland via AC Transit, with one transfer at City Center BART Station.

Detail:

- | | | |
|--|--------------------|---------------------------------|
| 1. | DODHF | To: San Francisco BART |
| | Distance: 24 miles | Cost: \$2.45 |
| | Time: 70 minutes | Via: GG Transit #50/60 |
|
Note: Only GG Transit #1 leaves from Ignacio Boulevard. #48 from Sunset Parkway at origin of Ignacio Boulevard goes directly to San Francisco, taking about 60-70 minutes. (Leaves every 10 minutes from 6:20 to 7:00.) Another option is to get to the Ignacio Bus Pad on 101, to catch #51 (to ferry terminal) or #52. Other buses also leave from this pad. #50/60 leaves hourly from the Hamilton AFB main gate. Some buses terminate at Civic Center. Late evening buses terminate in San Rafael. | | |
| 2. | SF BART | To: Oakland West Station |
| | Distance: 6 miles | Cost: \$1.10 |
| | Time: 8-10 minutes | Via: BART |
| 3. | Oakland West | To: Naval Supply Center Oakland |
| | Distance: 2 miles | Cost: \$.30 for transfer |
| | Time: 10 minutes | Via: AC Transit #82 or 83 |

Origin: SKAGGS ISLAND

Destination: NAVAL HOSPITAL OAKLAND

Total Distance: 42 miles

Total Cost: NA

Total Est. Time: NA

Total Transfers: NA

Qualitative:

No public transit access to/from Skaggs Island. Easiest alternative would be to reach Mare Island (12 miles east) or NWS Concord (24 miles east), where a Navy van leaves for the Naval Hospital Oakland once per day. Next easiest would be to reach DODHF and access the transit available there; this is a tedious trip.

Origin: MARE ISLAND
Link: HS

Destination: SKAGGS ISLAND

Total Distance: 8 miles

Total Cost: NA

Total Est. Time: NA

Total Transfers: NA

Qualitative:

No public transit access to/from Skaggs Island. It is approximately 12 miles west of Mare Island.

Origin: NAS ALAMEDA

Destination: MARE ISLAND

Total Distance: 30 miles

Total Cost: \$4.45

Total Est. Time: 81-105 min

Total Transfers: 3

Qualitative:

Easiest would be to reach WPNSTA Concord, to access BART via the shuttle bus between the main gate and the Concord BART station, or to reach the Richmond BART station. Otherwise, access is very tedious: Mare Island to Vallejo via City of Vallejo Municipal Transit or Mare Island Ferry Company; Greyhound from Vallejo to Richmond BART; BART to Oakland City Center/12th Street Station; AC Transit #42 to NAS Alameda.

Another option would be to access the Navy Recreational van service at DODHF, or to use the Navy van service from Mare Island to Naval Hospital Oakland, transfer to AC Transit to BART, transfer to AC Transit. Also possibly can use Navy van from Naval Hospital to NAS Alameda. Some of these services have not been confirmed, however.

Detail:

- | | |
|------------------|--|
| 1. Mare Island | To: Vallejo Greyhound Station |
| Distance: 1 mile | Cost: \$.35 |
| Time: 10 min | Via: Vallejo Municipal Transit or Mare Island Ferry Company. |

Note: Check with City of Vallejo Municipal Transit (707) 644-8963 for transfer information; frequency is every 30 minutes.

The other possibility is the pedestrian ferry service across the Napa River to the City of Vallejo, via the Mare Island Ferry Company (707) 643-7542. Fare is \$.40; commute discount is available. Check with Ferry Company for frequency and transfer information.

- | | |
|----------------------|-------------------|
| 2. Vallejo Greyhound | To: Richmond BART |
| Distance: 16 miles | Cost: \$2.80 |
| Time: 25 min | Via: Greyhound |

Note: Greyhound Station appears to be 4 blocks from Richmond BART. Presuming walk is no problem. Otherwise, AC Transit 68 appears to serve both. Add \$.60 plus time.

Service times are as follows:

a.m. commute to Richmond:	lv 5:55 ar 6:20	or	lv 9:15 ar 9:40
p.m. commute from Richmond:	lv 4:45 ar 5:15	or	lv 6:05 ar 6:30

- | | |
|---------------------|-------------------------------------|
| 3. Richmond BART | To: Oakland City Center/12th Street |
| Distance: 10 miles | Cost: \$1.00 |
| Time: 26 min | Via: BART |
| 4. 12th Street BART | To: NAS Alameda |
| Distance: 3 miles | Cost: \$.30 for transfer from BART |
| Time: 20 min. | Via: AC Transit #42 |

Note: Frequency every 10-15 minutes during commute hours.

Origin: MARE ISLAND	Destination: NAVAL HOSPITAL OAKLAND
Total Distance: 40 miles	Total Cost: \$.60
Total Est. Time: 95-103 min	Total Transfers: 0 or 3

Qualitative:

Easiest alternative is the Navy van service which leaves once per day. This service is operated by Mare Island. The hospital information desk states that it leaves the hospital at 2:00 Monday through Friday.

Next alternative would be to reach NWS Concord, to access BART via the shuttle bus between the main gate and the Concord BART station, or to reach the Richmond BART Station. Otherwise, access is very tedious: Mare Island to Vallejo via City of Vallejo Municipal Transit or Mare Island Ferry Company; Greyhound from Vallejo to Richmond BART; BART to Coliseum Station in Oakland; AC Transit #56 to Naval Hospital Oakland.

Public transit information is provided below.

Detail:

- | | |
|------------------|---|
| 1. Mare Island | To: City of Vallejo |
| Distance: 1 mile | Cost: \$.35 |
| Time: 10 min | Via: Vallejo Municipal Transit or Mare Island Ferry Company |

Note: Check with City of Vallejo Municipal Transit (707) 644-8963 for transfer information. Frequency is every 30 minutes.

The other possibility is the pedestrian ferry service across the Napa River to the City of Vallejo, via the Mare Island Ferry Company (707) 643-7542. Fare is \$.40; commute discount is available. Check with Ferry Company for frequency and transfer information.

- Vallejo Greyhound
Distance: 16 miles
Time: 25 min

To: Richmond BART
Cost: \$2.80
Via: Greyhound

Note: Greyhound station is 4 blocks from Richmond BART. Presuming walk is no problem. Otherwise, AC Transit 68 serves both. Add \$.60 plus time.

Service times are as follows:

a.m. commute to Richmond: lv 5:55 ar 6:20 or lv 9:15 ar 9:40
p.m. commute from Richmond: lv 4:45 ar 5:15 or lv 6:05 ar 6:30

- Richmond
Distance: 8 miles
Time: 21 min

To: Oakland McArthur Station
Cost: \$.90
Via: BART

- McArthur Station
Distance: 5 miles
Time: 35 minutes

To: Treasure Island
Cost: \$.30 for transfer from BART
Via: AC Transit #T

Note: Frequency every 30 minutes during commute hours.

Origin: MARE ISLAND

Destination: WPNSTA CONCORD

Total Distance: 18 miles
Total Est. Time: 96-110 min

Total Cost: \$5.20
Total Transfers: 3

Qualitative:

This would be a very tedious trip by public transit, involving a local bus trip from the main gate to reach the Richmond BART station via Greyhound (see the Mare Island to Alameda link); then to the Concord BART station and take a BART shuttle bus to the main gate. (51 minutes, \$1.55 from Richmond BART to Concord BART.)

Detail:

- Mare Island
Distance: 1 mile
Time: 10 minutes

to: Vallejo Greyhound Station
Cost: \$.35
Via: Vallejo Municipal Transit or Mare Island
Freey Company.

Note: Check with City of Vallejo Municipal Transit (707) 644-8963 for transfer information. Frequency is every 30 minutes.

The other possibility is the pedestrian ferry service across the Napa River to the City of Vallejo, via the Mare Island Ferry Company (707) 643-7542. Fare is \$.40; commute discount is available. Check with Ferry Company for frequency and transfer information.

- | | |
|----------------------|-------------------|
| 2. Vallejo Greyhound | To: Richmond BART |
| Distance: 16 miles | Cost: \$2.80 |
| Time: 25 min | Via: Greyhound |

Note: Greyhound Station appears to be 4 blocks from Richmond BART. Presuming walk is no problem. Otherwise, AC Transit 68 appears to serve both. Add \$.60 plus time.

Service times are as follows:

a.m. commute to Richmond:	lv 5:55 ar 6:20	or	lv 9:15 ar 9:40
p.m. commute from Richmond:	lv 4:45 ar 5:15	or	lv 6:05 ar 6:30

- | | |
|------------------|------------------|
| 3. Richmond BART | To: Concord BART |
| Distance: | Cost: \$1.55 |
| Time: 51 min | Via: BART |
| 4. Concord BART | To: Concord |
| Distance: 1 mile | Cost: \$.50 |
| Time: 10 min | Via: Shuttle Bus |

Origin: NAS ALAMEDA

Destination: NAVAL HOSPITAL OAKLAND

Total Distance: 6 miles

Total Cost: free or \$1.50

Total Est. Time: 15 min or

Total Transfers: 0 or 2
48-63 min

Qualitative:

Easiest would be to use the Navy van service, which operates once per day or as needed. The hospital information desk states that the van leaves the hospital at 2:00 weekdays. Public transit, detailed below, is another alternative. It would involve AC Transit #42 to the City Center station; BART to Coliseum station; AC Transit #56 to Naval Hospital.

Detail:

- | | |
|-------------------|----------------------------------|
| 1. NAS Alameda | To: 12th Street/City Center BART |
| Distance: 3 miles | Cost: \$.60 |
| Time: 20 minutes | Via: AC Transit #42 |

Note: Frequency every 10-15 minutes during commute hours, 20 minutes midday.

- | | |
|-------------------|------------------------------|
| 2. City Center | To: Oakland Coliseum Station |
| Distance: 6 miles | Cost: \$.60 |
| Time: 11 min | Via: BART |

3. Coliseum Station	To: Naval Hospital Oakland
Distance: 4 miles	Cost: \$.30 for transfer
Time: 23 minutes	Via: AC Transit #56

Origin: NAS ALAMEDA	Destination: TREASURE ISLAND
Total Distance: 6 miles	Total Cost: \$.60
Total Est. Time: 53-63 min	Total Transfers: 1

Qualitative:

Involves AC Transit #42 to City Center and AC Transit #T to Treasure Island.

Detail:

1. NAS Alameda	To: 12th Street/City Center BART
Distance: 3 miles	Cost: \$.60
Time: 20 minutes	Via: AC Transit #42

Note: Frequency every 10-15 minutes during commute hours.

2. City Center Station	To: Treasure Island
Distance: 5 miles	Cost: free with transfer
Time: 33 minutes	Via: AC Transit #T

Note: Frequency every 30 minutes during commute hours.

Origin: NAS ALAMEDA	Destination: NSC OAKLAND
Total Distance: 6 miles	Total Cost: \$.60
Total Est. Time: 28 min	Total Transfers: 1

Qualitative:

Must take AC Transit #42 to City Center BART; transfer to AC Transit #82/83 to NSC Oakland.

Detail:

1. NAS Alameda	To: Oakland City Center/12th Street BART
Distance: 3 miles	Cost: \$.60
Time: 20 min	Via: AC Transit #42

Note: Frequency every 10-15 minutes during commute hours; every 20 minutes midday.

- | | |
|-------------------|---------------------------|
| 2. City Center | To: NSC Oakland |
| Distance: 3 miles | Cost: free with transfer |
| Time: 15 min | Via: AC Transit #82 or 83 |

Note: Frequency every 5-15 minutes during commute hours.

Origin: PWC SF BAY OAKLAND	Destination: NAVAL HOSPITAL OAKLAND
Total Distance: 10 miles	Total Cost: \$2.00
Total Est. Time: 47-63 minutes	Total Transfers: 2

Qualitative:

Easiest might be to access the Navy van served by NAS Alameda once per day or as needed. This can be done by catching AC Transit #82/83 to City Center BART, and transfer to AC Transit #42 to NAS Alameda.

Detail:

- | | |
|-----------------------|------------------------------|
| 1. PWC SF Bay Oakland | To: City Center BART Station |
| Distance: 3 miles | Cost: \$.60 |
| Time: 15 minutes | Via: AC Transit #12 |
| 2. City Center | To: Oakland Coliseum Station |
| Distance: 4 miles | Cost: \$.60 |
| Time: 11 min | Via: BART |
| 3. Coliseum Station | To: Naval Hospital Oakland |
| Distance: 4 miles | Cost: \$.30 for transfer |
| Time: 35 minutes | Via: AC Transit #56 |

Note: Frequency every 15 minutes during commute hours.

Origin: TREASURE ISLAND	Destination: NAS ALAMEDA
Total Distance: 9 miles	Total Cost: \$.60
Total Est. Time: 53 minutes	Total Transfers: 1

Qualitative:

Involves AC Transit #T to City Center and AC Transit #42 to NAS Alameda.

Detail:

- | | |
|--------------------|-------------------------|
| 1. Treasure Island | To: City Center Station |
| Distance: 6 miles | Cost: \$.60 |
| Time: 33 minutes | Via: AC Transit #T |

Note: Frequency every 30 minutes during commute hours.

- | | |
|------------------------|------------------------------------|
| 2. City Center Station | To: NAS Alameda |
| Distance: 3 miles | Cost: \$.30 for transfer from BART |
| Time: 20 minutes | Via: AC Transit #42 |

Note: Frequency every 10-15 minutes during commute hours.

Origin: TREASURE ISLAND

Destination: NAVAL HOSPITAL OAKLAND

Total Distance: 11 miles

Total Cost:

Total Est. Time:

Total Transfers:

Qualitative:

Easiest would be to use the Navy van which serves the Naval Hospital and Treasure Island three times per day. The Hospital information desk states that the van, which is operated by the hospital, leaves the hospital at 6:30, 12:00 and 3:30 or 4:30 weekdays. It is an out-patient shuttle service, which carries an average of 12 people per trip. Public transit is probably not necessary.

Origin: TREASURE ISLAND

Destination: NSC OAKLAND

Total Distance: 10 miles

Total Cost: \$.60

Total Est. Time: 35 minutes

Total Transfers:

Qualitative:

Involves taking AC Transit #T to Oakland West BART; transfer to AC Transit #82/83 to NSC Oakland.

Detail:

- | | |
|--------------------|--------------------------|
| 1. Treasure Island | To: Oakland West Station |
| Distance: 5 miles | Cost: \$.60 |
| | Via: AC Transit #T |

Note: Frequency every 60 minutes during commute hours.

- | | |
|------------------------|---------------------------------|
| 2. City Center Station | to: Naval Supply Center Oakland |
| Distance: 2 miles | Cost: free with transfer |
| Time: 15 minutes | Via: AC Transit #82 or 83 |

Note: Frequency every 5-15 minutes during commute hours.

Origin: NSC OAKLAND	Destination: NAVAL HOSPITAL OAKLAND
Total Distance: 10 miles	Total Cost: \$2.00
Total Est. Time: 47-63 minutes	Total Transfers: 2

Qualitative:

Easiest would be to access the Navy van served by NAS Alameda one per day or as needed. Public transit is an alternative. It uses AC Transit #82/83 to Oakland City Center BART station; BART to Coliseum Station; AC Transit #56 to Naval Hospital Oakland.

Detail:

- | | |
|-----------------------|------------------------------|
| 1. NPW SF Bay Oakland | To: City Center BART station |
| Distance: 3 miles | Cost: \$.60 |
| Time: 15 minutes | Via: AC Transit #12 |

Note: Frequency every 12 minutes during commute hours.

- | | |
|---------------------|----------------------------|
| 2. City Center | To: Coliseum Station |
| Distance: 4 miles | Cost: \$.60 |
| Time: 11 minutes | Via: BART |
| 3. Coliseum Station | To: Naval Hospital Oakland |
| Distance: 4 miles | Cost: \$.30 for transfer |
| Time: 23 minutes | Via: AC Transit #56 |

Note: Frequency every 15 minutes during commute hours, every 30 minutes midday.

Origin: WPNSTA CONCORD	Destination: NAVAL HOSPITAL OAKLAND
Total Distance: 22 miles	Total Cost: \$2.25
Total Est. Time: 80-83 min	Total Transfers: 3 or 0

Qualitative:

Easiest alternative is the Navy van which offers service between NWS Concord and Naval Hospital Oakland twice per day. The hospital information desk states that the

van leaves the hospital at 1:45 and 2:00 weekdays. The alternative public transit route involves a shuttle bus to the Concord BART station; BART to Coliseum station; AC Transit #56 to Naval Hospital Oakland.

Detail:

- | | |
|--|---|
| 1. WPNSTA Concord
Distance: 1 mile
Time: 10 minutes | To: Concord BART station
Cost: \$.50
Via: Shuttle Bus |
| 2. Concord
Distance: 17 miles
Time: 47-60 min | To: Oakland Coliseum Station
Cost: \$1.45
Via: BART |
| 3. Coliseum Station
Distance: 4 miles
Time: 23 minutes | To: Naval Hospital Oakland
Cost: \$.30 for transfer
Via: AC Transit #56 |

Note: Frequency every 15 minutes during commute hours, every 30 minutes midday.

Origin: HUNTERS POINT

Destination: NAVAL HOSPITAL OAKLAND

Total Distance: 27 miles

Total Cost: \$2.35

Total Est. Time: 78-93 minutes

Total Transfers: 2

Qualitative:

Involves #19 Muni to SF BART (assuming it stops fairly close to station); BART to Coliseum station; #56 AC Transit to Naval Hospital Oakland.

Detail:

- | | |
|--|---|
| 1. Hunters Point
Distance: 6 miles
Time: 35 minutes | To: Civic Center BART
Cost: \$.60
Via: Muni #42 |
| 2. Civic Center
Distance: 10 miles
Time: 27-30 min | To: Oakland Coliseum Station
Cost: \$1.45
Via: BART |
| 3. Coliseum Station
Distance: 4 miles
Time: 23 minutes | To: Naval Hospital Oakland
Cost: \$.30 for transfer
Via: AC Transit #56 |

Note: Frequency every 15 minutes during commute hours, every 30 minutes midday.

Origin: WESTDIV SAN BRUNO

Destination: NAVAL HOSPITAL OAKLAND

Total Distance: 40 miles

Total Cost: \$2.40

Total Est. Time: 90-103 minutes

Total Transfers: 2

Qualitative:

Involves SamTrans #3C to Daly City BART; BART to Coliseum station; AC Transit #56 to Naval Hospital Oakland.

Detail:

1. San Bruno
Distance: 6 miles
Time: 25-30 minutes

To: Daly City BART
Cost: \$.50
Via: SamTrans

2. Daly City
Distance: 20 miles
Time: 42-50 min

To: Oakland Coliseum Station
Cost: \$1.60
Via: BART

3. Coliseum Station
Distance: 4 miles
Time: 23 minutes

To: Naval Hospital Oakland
Cost: \$.30 for transfer
Via: AC Transit #56

Note: Frequency every 15 minutes during commute hours, every 30 minutes midday.

Origin: Moffett Field

Destination: Naval Hospital Oakland

Total Distance: 74 miles

Total Cost: free or public transit

Total Est. Time: 90 min

Total Transfers: 0 or many

Qualitative:

Easiest to take the Navy van which serves Naval Hospital and Moffett Field twice per day. The Hospital information desk states that the time the bus leaves varies each day. It is operated by Moffett Field. Public transit involves a #51 Santa Clara County Transit; transfer to #20 at Middlefield and Castro; transfer to #180 at K-Mart in Milpitas; take the #180 to the Fremont BART station; BART to Coliseum; #56 AC Transit to Naval Hospital. Or, take #51 Santa Clara County Transit to #22 at El Camino; transfer to #7F SamTrans at Page Mill Road; BART from Embarcadero, etc. Last alternative is #51 to train station at Castro; train to SF; bus to BART; BART to Coliseum, etc.

Origin: Naval Station Stockton

Destination: Naval Hospital Oakland

Total Distance: 73 miles

Total Cost: \$9.30+

Total Est. Time: 170 minutes

Total Transfers: 4

Qualitative:

Naval Hospital Oakland is accessible via transit from NCS Stockton by either Navy operated or civilian service. The Navy service is the most direct and does not charge a user-fee, but it offers only one early morning departure time. A Navy van leaves NCS once a day, five days a week, and stops at various Naval activities in the Central Bay Area, including the hospital. The van departs at 0800, limiting the scheduling of appointments by NCS personnel to times after 1000. After the van makes its other stops, it returns to the hospital. If required to accommodate an individual's appointment schedule, the van will delay its departure from the hospital for NSC Stockton.

Civilian transit from NSC to the hospital, via Greyhound Bus from downtown Stockton to downtown Oakland, offers two morning departure times, but making connections at either end is difficult and the trip is costly and time consuming. The short trip from NSC to the downtown Stockton Greyhound Station can be made by public transportation only by taxicab. Upon arriving in downtown Oakland, a transfer is made to BART. BART is taken to the Coliseum station, and AC Transit to the Naval Hospital. The BART Stations are from four to nine blocks away from the Greyhound.

Detail:

- | | |
|---------------------------|---------------------------------|
| 1. Naval Station Stockton | To: Stockton Greyhound Terminal |
| Distance: 6 miles | Cost: Unknown |
| Time: 15 minutes | Via: Taxicab |
| 2. Stockton | To: Oakland Greyhound Terminal |
| Distance: 73 miles | Cost: \$8.25 (\$15.70 RT) |
| Time: 85-110 minutes | Via: Greyhound |

Times are as follows:

Stockton to Oakland

leave	arrive
8:20	9:55
11:00	12:25
2:30	4:10
5:45	7:20

Oakland to Stockton

leave	arrive
8:30	10:00
10:55	1:35
2:40	4:15
5:45	7:35

- | | |
|----------------------|----------|
| 3. Oakland Greyhound | To: BART |
|----------------------|----------|

This must be accomplished either by walking approximately four blocks to the 19th Street station, or by taking AC Transit #15, 72M or 72P to the 12th Street station (frequency every 10-30 minutes). If AC Transit is taken to BART, add \$.60¢ for bus fare and subtract \$.15 for BART fare.

4. 19th Street BART
Distance: 4 miles
Time: 13 minutes

To: Oakland Coliseum station
Cost: \$.75
Via: BART

5. Coliseum Station
Distance: 4 miles
Time: 35 minutes

To: Naval Hospital Oakland
Cost: \$.30 for transfer
Via: AC Transit #56

Note: Frequency every 15 minutes during commute hours; 30 minutes midday.

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